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THE CULTIVATOR.

TO IMPROVE THE SOIL AND THE MIND.

THE CONTRAST,

BETWEEN THE HUSBANDRY OF NEW AND OLD SETTLED DISTRICTS.

The farmers in newly settled districts, forgetting that the fertility which gives them great crops, is the accumulation of ages, act as though it was inexhaustible; and, like the prodigal son, they go on living upon the patrimonial wealth of Providence, till its value becomes seriously impaired, or is wholly gone. They do not consider, that land, like every thing else, will wear out, by bad husbandry; and that it is the duty, as well as the interest, of the husbandman, to endeavor to preserve and to perpetuate its fertility. Their system is that of exhaustion. The lamentable effects of this system are seen all along the Atlantic border; where large districts, once teeming with fertility, have become poor and sterile. And even in the comparatively new states of Vermont, Kentucky and Tennessee, whose admission into the Union as states is fresh in our recollection, we already hear of exhausted fertility—of worn out lands; and the inhabitants of these states, in countless numbers, are pushing to the far west, in search of new and virgin soils, which, under a bad system of management, they may in turn feed upon and exhaust. The remark applies with like force to many districts of New-York. West Vermont and the valley of the Mohawk were, within our recollection, the great wheat districts, and furnished principally this important staple to the New-York market. Now they do not raise this grain in sufficient quantity for the domestic demand. Whence this change? Why this diminution in the products of the soil? The cause is too palpable to the most superficial observer. The farmer has been constantly going to the meal chest, without thinking of the necessity of replenishing his stores, till the meal is exhausted—he has been constantly drawing upon the riches of the soil, without employing those means, which Providence has placed abundantly within his reach, of preserving, or improving, its fertility. Had this system of exhaustion prevailed in Flanders, or in China, how lamentable would now have been the condition of their population? The lands in those countries were naturally no better than ours; and yet hastheir fertility not only been preserved, unimpaired, for thousands of years, but it has been increasing, with the increase of population, and the increasing wants of the human family.

In the old settled districts of our state, a very different course, from that practised in the newly settled districts, has, from necessity, to be adopted. In these, the fertility of the soil, having been greatly impaired, or exhausted, by the bad management of the pioneer settlers, it has become necessary to renovate and augment its productiveness; and where the experiment has been fairly tested, by industry, intelligence, and good management, the benefits have been so palpable, and success so encouraging, that improvements have increased in a progressive ratio, until many of the old districts, though once exhausted, have not only gained their natural fertility, but have been made to surpass it, and now exhibit examples of the most profitable husbandry in our land. The counties of Dutchess, Orange, Columbia, and a portion of Long Island, in our own state, and many districts in Massachusetts, Pennsylvania, &c. sufficiently attest this fact. In these, exhaustion has given way to a system of augmentation and improvement.

The deterioration of lands, by constantly cropping, without returning to them the means of fertility—the dung of the farm—is as inevitable, as is the starvation of animals, from whom we withhold the food necessary to their existence. The augmentation of fertility, by draining, manuring and alternating crops, is matter of as equal certainty. We possess the means; we have abundant examples to guide us in their application; and if we will but exercise intelligence, industry and perseverance, we shall preserve fertility and plenty in the new, and augment them in the older settled districts of our country.

COAL ASHES AS A MANURE.

From the favorable result of an experiment made in Ohio, of employing coal ashes for manuring corn, noticed in another column of this day's Cultivator, we have been induced to inquire to what extent, and with what effect, this material has been elsewhere applied, and we now communicate to the reader the result of our inquiries. There are two kinds of fossil coal—bituminous and anthracite.—Whether the ashes of the two kinds differ in their fertilizing properties or not, we are unable to say. But the facts we are about to state refer to ashes of the bituminous coal, which is the kind principally used in Great Britain, as well as in the vallies of the Ohio and Mississippi.

Davy says, that coal, on distillation, gives carbonate and acetate of ammonia, which are said to be very good manure; and that soot, derived from the burning of coal, and known to impart fertility to a soil, owes a part of its efficacy to the ammonial salts which it contains.—p. 35.

"The ashes of coals and cinders," we are advised in British Husbandry, "have the very perceptible effect of loosening, as well as stimulating those soils, [clays and heavy tenacious loams,] and when they can be procured in sufficiently large quantities, in the neighborhood of great towns and manufactories, they are ploughed in with great advantage, to the extent of fifty or sixty bushels, or even more, to the acre. The ashes of coal, wood and turf, when used for domestic purposes, are, in almost all country places, mixed up by the consumers with the dunghill, and, unless they form an unusual proportion of the heap, occasion but little sensible difference in the properteis of the manure; but when applied alone, as top dressings upon grass, they both strengthen the herbage, improve its quality, and encourage the growth of white clover; they are also used for many other crops, both of corn and artificial grasses."—p. 332.

"Coal ashes," says the Complete Grazier, p. 565, "when properly preserved, supply an excellent top dressing for clover, on dry, chalky soils, in the quantity of fifty or sixty bushels the acre, scattered in March and April; and are equally beneficial on grass lands, on which they are spread either during the winter, or in the course of the following spring. The quality of coal ashes may be much improved, by covering up, in every cart-load of ashes, one bushel of lime, in its hottest state, for about ten or twelve hours, when the lime will be entirely fallen. The whole is now to be well mixed together, and turned over two or three times, when the cinders, or half burnt pieces of coal, which would otherwise be of no use, will be reduced to as fine a powder as the lime itself. It should, however, be remarked, that in order to obtain this benefit from coal ashes, they should be kept perfectly dry; and when thus prepared, they are stated to improve swampy, moorish soils very materially, and in a very short time."

LEACHED ASHES AS A MANURE.

Leached or drawn ashes possess a highly beneficial effect, particularly when applied to lands deficient in calcareous matters, as lime or marl. They serve to improve the permanent texture of such soils. The ashes from the soap boilers of London yield 90 parts in 100 of calcareous matter. They serve to free light lands of sorrel, and in swampy soils they effectually destroy rushes and other aquatic weeds. They are extensively used on the light sands upon the Atlantic coast, and are bought up at a shilling a bushel, in the towns and cities upon our navigable waters, and transported thither. There are immense quantities of these ashes in the interior, on the sites of

old asheries, which may be employed to great advantage to agriculture, whenever the agriculturists of frontier districts find time and disposition to arrest the deterioration of their lands. The small quantity of alkaline salt and gypsum which they contain, also renders them much superior to common calcareous matter, as a top dressing for every kind of grass. Soap-boilers' ashes, according to the "Complete Grazier," are also excellent on a peat moss, in strong cold soils, when applied in the quantity of two or three cart-loads an acre. In Lancashire, they have been found good and durable on dry pastures, and have also been successfully used in other parts, and in various proportions. They are generally considered better for pasture than arable, and crops of clover hay have been more than doubled by them. The effect of this manure is, that *it always destroys bugs and vermin of every kind.* Evidence of these latter facts may be found in communications to the British Board of Agriculture, vol. vi. part ii.

EFFECTS OF CROPPING.

We have heretofore endeavored to make it plain to our readers, that living and dead plants contain the same elementary matters,—that dead plants afford the proper aliment for living plants,—and that consequently the fertility of a soil will be increased or diminished, in proportion to the quantity of dung, or vegetable food, which the farmer returns to it. New, or virgin soils, may contain a large supply of vegetable matter or humus, enough to feed several successive crops; yet the powers of fertility decrease with every succeeding one, if the crops are carried off from the soil and nothing returned to it to supply the loss,—until finally, if the system of cropping goes on in this way, the food of plants will become exhausted, and the land become sterile and barren, for all the useful purposes of husbandry. If we look to the old continent, we shall perceive that immense districts, once fertile and populous, have, by the injudicious management and violence of man, become almost waste and depopulated. A great portion of Egypt, of Judea, and a part of Spain, which once sustained their millions of inhabitants, and were to the world examples in the arts of culture and civilization, may be cited in illustration of this fact. And even in this new country, the soil, from the abuse of those who are charged with its culture, has already, in many districts, put on the garb of barrenness and old age, and threatens to be not much longer tributary to the wants of man.

If we put an ox to a stack of hay, he may subsist upon it for a longer or a shorter period, according to the quantity of food which it contains; but if we do not provide for him a further supply, when the stack is consumed, the ox will die. So with our crops: Providence has imparted fertility to our soil, and has endowed man with the faculty, and provided him with the means, of perpetuating that fertility. But the fertility of the soil will become exhausted, like the stack of hay, by cropping, and unless renovated by the care of the husbandman, our crops, like the ox, will die, or cease to grow, for want of food. And it is as improvident to neglect the one as the other—as reprehensible to starve the vegetable as the animal. However men may theorize upon the food of plants, every farmer *knows* that dung is an unfailing source of fertility—that dung makes grain, and grass, and roots—that grain, grass and roots fatten cattle—and that cattle make manure. These all work together on the principle of the endless chain, and suggest a certain means of preserving the fertility of our lands.

Crops exhaust the fertility of the soil, in proportion to the nourishment which they respectively draw from it. To keep up our comparison, we may liken the wheat and the corn crops to our neat cattle and horses, which are gross feeders, and require a large supply of food; and our grass and roots, to sheep and swine, which consume less—which thrive on scanty and coarse fare, and in a measure requite us for their keep, by the vegetable food they impart again to the soil. The hog and the sheep—the grass and the roots, will *live* upon the pasture or soil which will not sustain the more gross feeders—yet, like the latter, they will only *thrive* well when well fed.

Von Thaer, the distinguished head of the Prussian agricultural school at Moegelin, who has not perhaps his superior in the practical and scientific business of farming any where, has turned his attention, for several years, to a series of experiments and observations, with a view to ascertain the degree of diminution or augmentation of fertility, which soils ordinarily experience from the culture of the principal farm crops, and has combined the results of his observations in a series of tables. Although these do not possess perfect accuracy, for any thing like this would be impossible from the nature of the inquiry, they nevertheless serve as useful data to farmers who are anxious to preserve, or to increase, the fertility of their soils, by judicious rotations, and by applying all the means of fertility which the farm affords.

"The vegetative power," says British Husbandry, "is supposed to be in production to the quantity of *humus*, (or soluble vegetable matter,) or mould, which is contained in the soil, and its consumption has been found to be regulated according to the amount of nutritive matter consumed by the crops which are grown upon it.—The degrees of exhaustion thus occasioned, have only been fixed by naturalists with any degree of certainty, in so far as regards the usual species of cultivated grain and pulse; for, as to the other products of the earth, although they have doubtless similar effects when similarly repeated, yet those which consist of vegetable roots and grasses, and which are drawn from the land before they have perfected their seed, are nevertheless—whether from the influence attributed to their shade upon the soil, from sustenance drawn from the air and water, or from other causes with which we are not acquainted—only viewed as ameliorating crops. Corn crops are, however, considered respectively to exhaust in proportions which render the proportion of about 4½ bushels of wheat equal to that of 6 bushels of rye, 8½ of barley, and 12 of oats."

"According to all the experiments which have been made, there is reason to suppose, however, that upon a soil of moderate fertility, an average crop of wheat impoverishes the land to the extent of 40 per cent, while one of rye only produces that effect as far as 30.—Although barley is more exhausting than oats, yet, upon strong land, in a less perfect state of culture, the latter produces proportionably larger crops, consequently absorbs more nutriment; and, for this reason, they may be both stated at 25 per cent.

"The exhaustion by these crops is proportionately repaired, and the land is restored to its former nutritive powers, in three ways, namely—

By the application of putrescent manure; according to its quantity and quality.

By the ground being left a certain time under pasture; according to the number of stock which it can support.

By the operation of a summer fallow; according to the manner in which it is performed."

Von Thaer considers the exhaustion by grain crops in the following relative proportions:—Wheat 4 degrees, rye 3¼, barley 2¼, oats 1 6/10 per bushel of product; that upon poor soils, whose original fecundity is 40, according to the scale given in the 4th No. of the present volume, a fallow adds 10 degrees to its fertility, pasture 20, and 8 tons of manure, of ordinary quality, 50 degrees—so that the manure and fallow, or manure and pasture, add 60 or 70 degrees, and are more than sufficient to double what the crop would have been without them. Without them, a crop of rye would have yielded but five bushels per acre; with them, the yield would be 7½ to 10 bushels. A fallow is beneficial, not only on account of the fertilizing properties it may draw from the atmosphere, and by the influence of its working on the land, but from the weeds and vegetable matters which it leaves. Pasture is fertilizing by the droppings of the stock, and the rich sward it gives to the plough and to the tilled crop.

In the two following tables, the *journal*, which is about two-thirds of an English acre, is the measure of land experimented upon.—The *schiffel* is more than a bushel and a half, Winchester measure. These tables are predicated upon accurate experiments, and show the augmentation or diminution of fertility, caused by the crops, the manures, the pasture and the fallow.

TRIENNIAL SYSTEM.

Crops and manures.	*Fecundity.*	
	Augmentation.	*Diminution.*
Fallow,	10 deg.	
6 4-10 loads of manure,	67 deg.	
Rye, 6 schiffels,		30 deg.
Barley, 6 do.		21 deg.
Fallow,	10 deg.	
Rye, 3¼ schiffels,		17½ deg.
Oats, 4 do.		10 deg.
Fallow, light folded,	28 deg.	
Rye,		20 deg.

Oats, ...		10½ deg.
	115 deg.	109 deg.

By which course, land would gain six degrees of fertility in nine years, provided the manure was that of well fed cattle; but if principally straw, it probably would occasion no amendment.

ALTERNATE SYSTEM.

Crops and manures.	*Fecundity.*	
	Augmentation.	*Diminution.*
9 loads of dung,.....	90 deg.	
Potatoes,* 80 schiffels,.....	10 deg.	
Barley, 9 do.....		30 deg.
Peas,.....		31½ deg.
3¾ loads manure,.....	37½ deg.	10 deg.
Rye, 8 schiffels,.....		40 deg.
Clover, mown,.....	12 deg.	
Pasture,.....	20 deg.	
Oats, 11 schiffels,.....		27½ deg.
	169½ deg.	139 deg.

This course would augment the fertility of the soil, in eight years, 30½ degrees, besides producing crops of superior value. This increase is owing to the clover, and pasture, and the additional quantity, as well as superior quality, of the dung, made by cattle fed upon roots and clover. Land is progressively improved by the production of good crops, consumed upon the farm, and the manure which they supply, if the latter is properly husbanded and applied.

"This will be rendered still more apparent by the following summary of four different rotations actually carried into effect, and each consisting of 120 journals, or = to 76.1.6 11-5 acres English, and bearing the crops here mentioned, after deducting the seed.

No. 1.

Courses of crops.	*Product per journal.*
Fallow dunged.	
Rye,.....	8½ schiffels.
Barley, ...	8½ do.
Oats, ...	8 do.
Clover and mown,.....	14 centnus.†

Ditto pasture two years, together with 170 journals of extra meadow and sheep pasture.

No. 2.

Oats upon pasture lay, ...	12 schiffels.
Fallow dunged.	
Rye,.....	10 do.
Barley, ...	10 do.
Rye,.....	5 do.
Clover and mown,.....	20 centnus.

Ditto pastured two years, together with 100 journals of extra pasture meadow, dunged.

No. 3.

Potatoes,.....	87 schiff.
Barley, ...	12 do.
Clover, ...	24 cent.
Oats, ...	14 schiff.
Peas, ...	6 do.
Rye, ...	10 do.
Tares, ...	20 cent.
Rye, ...	9 schiff.
Meadow dunged,..	15 cent.

Besides 100 journals sheep pasture.

No. 4.

Oats upon pasture lay,...	14 schiff.
Fallow, sown both before and after with winter and spring tares for fodder,..	20 cent.
Rye, ...	10 schiff.
Peas,.....	6 do.
Rye, ...	9 do.
Potatoes, ...	87 do.
Barley, ...	12 do.
Clover mown, ...	24 cent.
Do. pastured with sheep 2 years.	
Meadow,150 journals dunged,15 cent.	

"The produce of these several crops, both in fodder and manure, as well as in grain, and the profit gained by feeding of stock, was then summed up, and being calculated according to the price of grain, was reduced to schiffels of rye, from which were deducted the charges of cultivation, thus affording a parallel between the different courses as follows:—

Numbers.	Product of straw.	Produce of fodder, reduced in wt. to an estimate in hay.	Manure.	Profit on cattle.	Profit of grain.	Nett balance.
	Centnus.	Centnus.	Centnus.	Schiff.	Schiff.	Schiff.
1	4173	2936	14219	992	1948	1869
2	6464	4650	22228	1651	2958	3028
3	7916	9120	29272	2430	2960	3458
4	10973	12315	41791	3178	4323	5188

It appears from these results, that the fertility of the soil, and the consequent profits of the farm, was increased,

First. In proportion to the augmentation of manure, by reason of meadow, green crops and roots;

Second. In proportion to the increased ratio which the above-named crops and pasture, bore to the grain crops. And,

Thirdly. In proportion to the amount of pasture.

And it will be further seen, that the courses were profitable, and the fertility of the soil increased, in proportion as green, leguminous and root crops were alternated with grain crops—the two first, and least profitable courses, giving three grain crops in successive years—the third course intervening clover, peas or tares between the grain crops—and the fourth and most profitable course alternating dry, green, leguminous and root crops, followed by clover mown or pastured three years.

The inference from these experiments, made by one of the most intelligent and careful men, is, that if we would preserve, or increase the fertility of our lands, and thus augment the profits of our labor, we should not sow dry crops for two successive years, upon the same field—but alternate them, as far as practicable, with roots, legumens, green crops, meadow and pasture.

The reader will find these matters more largely treated on in British Husbandry, and particularly in Von Thaer's works on agriculture.

THE PRAIRIE REGION,

In which a respectable number of impressions of the Cultivator circulates, is likely ere long to suffer, or already suffers, for the want of wood and timber, not only for fuel, fencing, building, and the common purposes of life, but wood is or will be wanted for shelter, for crops and for cattle, to protect them from the inclemency of winter. The inhabitants should give their earliest attention to this matter. With a view to encourage and aid them, in providing in time, an absolute necessary for their posterity, we make an extract from Wetmore's late published Gazetteer of Missouri, showing a successful commencement in planting forest wood, by an enterprising citizen of that state. The editor is describing Saline county, which lies on the south bank of the Missouri, about 400 miles west of St. Louis, on the Mississippi river.

"They (the inhabitants of Saline county,) have a custom of preserving and cherishing with care, the clumps of brush,* and even the patches of hazel, with which their finest rolling prairies abound; and these are objects of as great solicitude as the sacred groves, or the foliage, of Academus was in Athens. When the prairie fires are kept out of the hazel patches for a year or two, FOREST TREES SPRING UP IN CONSIDERABLE VARIETY; and in the ploughed fields, cotton wood is observed to shoot up with a most rapid growth.—Some successful experiments have also been made in forest planting in Saline. Gen. Thomas A. Smith, who has a prairie farm of such ample extent, that a British peer would covet it as an estate suited to his rank, *has growing around him, a forest that he has planted, of black locust, chesnut, white pine, cedar, arbor vitae, cotton wood and catalpa*, all exhibiting the most thrifty and vigorous growth."

Mildew on the Gooseberry.—We have this year repeated the application of a weak brine to our gooseberries, by sprinkling it with a brush upon the foliage and fruit, to cure the mildew, and with apparent good success—the disease having been arrested, and in a measure removed. A Chautauque paper assures us, that syringing grapes (or gooseberries,) with strong soap suds, is a complete preventive of mildew.

* The augmentation of fertility is here added, because of the culture bestowed upon the potatoes as a fallow crop, the value of which is considered equal to 10 degrees.

The centnu is 103 lbs. English.

* It is remarked by Maj. Wetmore, the author, that if fire is kept from the prairies, a spontaneous growth of timber trees often springs up in them.

OLDEN TIMES.

We proceed to draw lessons of instruction from the first volume of the Transactions of the Society for the Promotion of Agriculture, &c.

SAVING MULBERRY SEED.

To save seed of the mulberry, Mr. De Labigaire gives the following directions: "Gather the berries as they fall from the tree; put them for two days in a dry place, where they must be turned up and down, for fear they should be heated; after which mash them with your hands in a tub, pouring over some water from time to time, in order to separate the seed from the must. Let then the water settle for a quarter of an hour, and all the useless particles floating over will be taken out. Repeat the washings till the seed is disengaged and pure. The best seed being the heaviest will stay always at the bottom of the tub. Then spread the seed to dry upon a piece of linen, and when dry it is put by till the season of sowing," which should be about the first of May.

CHANCELLOR LIVINGSTON TO ARTHUR YOUNG.

The next article in order is a letter from Chancellor Livingston to Arthur Young, well known as one of the most distinguished agriculturists of Great Britain. We quote from this a noble sentiment, and commend it to the special notice of all who are rich in agricultural experience, and who are capable of benefitting the community by their practical or scientific knowledge.

"The happiness of man," says the Chancellor, "depends so much upon the advancement of agriculture, that every new discovery, every improvement, by which the fruits of the earth are increased, should be thrown into the common stock; and the man who has been so fortunate as to make them, should thank God that he has been enabled, in some sort, to repay to society the debt that he owes them for the benefits he has himself received from the discoveries of others, to the great mass of which his own, however important, will be insignificant."

We have in this letter a singular instance of the change, produced by climate, upon the texture and color of the wool of sheep—and verifying the remark of the naturalist, that the texture of the hair and wool of animals becomes finer, and the color whiter, as they are removed to colder latitudes. "I send you," says Chancellor L. "a sample of wool, from a stock of sheep which I received from the West Indies, and which had originally no wool, but was covered with a thick coat of red hair. This is changing into wool, which I think superior in fineness to that of Shetland, with which I have compared it; but what is very remarkable, is, that the wool is white, though the original color of the sheep, and the hair intermixed with the wool, is of a mahogany, or what is called blood bay in horses."

This letter details the result of further experiments with gypsum, applied to potatoes, when about three inches high. Gypsum induced a remarkable growth, and the product was greater, without dung, than on the adjoining ground, which had been dunged. On buckwheat it caused an average growth of four feet, which lodged, and consequently diminished the product in grain. Oats, sown upon ground previously plastered, and in clover, averaged sixty-four bushels per acre, notwithstanding the soil was naturally poor. The great product was ascribed to effects of the clover, and the gypsum which had been sown in previous years.

Effects of shade-trees upon vegetation,—by Chancellor Livingston. "I planted maize on the west side of a young wood, consisting of oaks, poplars, a few chesnuts, and a large mulberry, somewhat advanced into the field. The shade made by the rising sun extended nearly across the field, and was not entirely off until about ten o'clock. I remarked, that as far as the shade of the chesnuts reached, the corn was extremely injured; it was yellow and small; the conical shape of the morning shade from particular trees, might be traced a considerable extent, in the sickly appearance of the plants. The black oaks were likewise injurious, but less so than the chesnut; the poplars very little so. Near the mulberry tree, the corn was covered by its shade a very long time every morning, and though not so large as that which had more sun, maintained a healthy appearance. The shade of the locust is well known to be extremely beneficial to grass grounds."

These experiments were repeated by Chancellor Livingston, in 1793,—the ground sown with buckwheat and plastered. The crop grew more than four feet high, *as well where it was shaded by mulberry and apples trees*, as where it had *no shade*. Under the black oak it was less healthful. Under the chesnut it was not half a crop. The shade of the apple tree was hurtful to Indian corn. The Chancellor concludes with remarking, "that the injury some vegetables receive from the shade of certain trees, is not owing simply to the diminution of light, but either to the change the light undergoes in passing through them, or from its dissolving and becoming the vehicle of some substance noxious to certain plants contained in the tree through which it passes."

The cast iron plough-share, was first introduced into use among us so late as 1793, as appears by a communication of Col. John Smith, describing it, and the first experiments made with it. Our recollections go back to the period when none but wooden mould-boards were used in our husbandry.

EXPERIMENTS WITH LUCERN.

The next article we shall notice is a communication from John Stevens, of Hoboken, detailing his experiments on wheat, clover and lucern.

Three and a half acres of loamy soil, were manured and cropped with Indian corn. The corn was cut up in October, and gave a good yield. The ground was immediately dressed with street dirt, ashes and dung, ploughed and sown with three and a half bushels of seed wheat. The product was estimated at 100 bushels of wheat on the three and a half acres. Clover was sown in March upon the wheat, and upon one acre eight pounds of lucern. The clover was cut in October, after the wheat crop was taken off, and gave four tons of hay. The seed of the lucern did not grow but partially. Two other experiments follow, designed principally to determine the best mode of managing lucern, and the best time of sowing it. From these experiments Mr. S. concludes,—1. That lucern should not be sown too early, say not before May. 2. That the ground should be well prepared for its reception, by a potato or other hoed and dunged crop, and that in the culture of that crop all weeds should be carefully extirpated. 3. That lucern may succeed very well when sown with barley, without clover. And 4. That the plant seems admirably fitted to our climate.

TALL MEADOW OAT GRASS.

Upon the superior properties of this grass we have an interesting letter from the Rev. Dr. H. Muhlenburgh, of Lancaster, Pa. "I have cultivated this grass a number of years," says the Doctor, "and find it, after a great many trials of pretty near all other grasses, the *earliest*, *latest* and *best* grass for green fodder and hay. It blossoms in the middle of May, the same time with the common red clover, and the seed ripens a month after. Horses, it is true, do not like it green, at least not all of them, but eat it in hay. Horned cattle prefer it to all other grasses. It will grow best in clover soil, and the leaves are from two to four feet high before it blossoms; in the blossom the stalk rises from five to seven feet. It ought to be cut in blossom about the end of May, [middle or latter part of June in lat. 42,] and will yield an abundance of sweet good hay. The seed may be sown in the fall or spring, with or without grain, and must be brushed in or lightly harrowed. If mixed with clover, it will make uncommon good upland meadow."

RELATIVE VALUE OF GRASSES.

Dr. Muhlenburgh thus ranges the grasses he cultivated, their good quality being in the order in which they are named:—1. Tall meadow oat,* (*Avena elatior.*) 2. Tall fescue grass, (*Festuca elatior.*) 3. Meadow fox-tail grass,* (*Alopecurus pratensis.*) 4. Meadow soft-grass, (*Holcus lanatus.*) 5. Timothy, or meadow cats-tail grass, (*Phleum pratense.*) 6. Rough cock's-foot, or orchard grass, (*Dactylus glomerata.*) 7. Rye grass,* (*Lolium perenne.*) 8. Sweet scented vernal grass,* (*Anthoxanthum odoratum.*) 9. Reedy cinna, (*Cinna arundenacia.*) 10. Broom grass, (*Bromi,*) two species. All these, continues the doctor, should be cultivated with timothy, in our bottoms or meadows, which can be watered. For upland meadows he recommends clover, lucern and sanfoin,—the first being the best preparation for a good crop of wheat.

Dr. Muhlenburgh recommends a free intercourse among literary and intelligent men, with the view of promoting agricultural improvement. "Agriculture," he remarks, "will, I hope, be our chief study, and be the means to raise the Americans among the first nations of the earth." * Exotics.

SCARCITY OF CATTLE FOOD IN BRITAIN.

The last winter and spring was a severe one for farm stock in the north of Great Britain. A letter shown to us from a farmer there, says:—"The last season was the worst I ever knew for keeping farm stock. The turnip crops were dreadful bad. Hay has sold

from £6 to £8 per ton, (= to $26 to $33,) and so short is the crop of straw, that many cattle have not even that, and are dying daily; the sheep too are poorer than I ever saw them, and there is a great mortality among them; but I fear it will be much more so when the grass grows of which there is very little appearance yet, though nearly May. The present month (April,) has been the severest ever known, and still continues very cold. So much snow fell in October, that the harvest could not be got in, in the north of Scotland, which, with the severity and long continuance of winter, has produced a famine there to an alarming extent, and subscriptions are on foot here for the relief of the distressed, without which aid the land could not be again cropped in many cases."

Gloucester or Cotswold Sheep seem to be coming into repute, and to have been much improved. The writer above, and who ranks high as a breeder, says his sales, comprising 40 of sixteen months old, made near £17 each, = $75—and his brother's more than £15 each.

THE GRAIN WORM,

We are sorry to learn, has committed great ravages upon the wheat crop, and has extended itself, as we predicted, into Dutchess county, on the south, as far as Fishkill; and there are reasons to believe, that it may be found west nearly or quite to the Genesee valley. In a circle of 20 miles around this city, it is estimated, that the product of the wheat crop will be diminished two-thirds by them; and we are told that in some cases the wheat fields have been opened to the farm stock, not being considered worth preserving. The worm is also found in rye and barley.—Some spring wheat was sown by us in May, in the hope of escaping the worm. It is now (July 16,) coming into head. The fly of the grain worm is seen upon it at evening, in small numbers. We shall note its effects in our next number.

We would here call the public mind to the fact, that three years ago, while the worm was yet but on our borders, the State Agricultural Society pointed out, in a memorial to the legislature, the apprehended evil, and urged the policy of offering very liberal premiums for the discovery of an efficient preventive; but their suggestions were not even courteously noticed. Such premiums might not have done good—but they could not possibly have done harm; and had they led to the discovery of a preventive of the evil, such a discovery would have benefitted the state millions of dollars.

EXPERIMENTS IN MANURING CORN.

A Muskingum farmer tell us, in the Zanesville Gazette, that last year he manured two acres of corn, on a sandy loam, putting a shovel full of each of the following materials in the hill, and planting directly upon it, viz:

1. Half an acre with sheep manure;
2. Half an acre with chip manure;
3. Half an acre with earth and manure from the barn-yard, the yard being ploughed;
4. Half an acre with stone coal ashes.

No. 1, planted on the sheep manure, did not any of it grow. There was very little difference between Nos. 2 and 3—the product being about 50 bushels per acre,—while No. 4 far surpassed the rest, and yielded 100 bushels an acre. Pumpkins were planted with each kind of manure; all did well, and gave a fine crop.

The quantity of fossil coal consumed in the country is every year increasing; and if these ashes should prove to be a means of adding fertility to our soil, to the degree indicated in the above noticed experiment, they will become invaluable. We want more assurance, however, which repeated experiments only can give, of their beneficial effects, and of their adaptation to particular soils and particular crops. We will be obliged to any gentleman who has experimented with coal ashes, if he will send us the result of his observations on the subject.

EXPERIMENTS WITH GYPSUM.

The following was given to the board of agriculture, by H. Smith, as the result of nicely managed experiments with gypsum and clover. The two pieces were precisely similar, lying alongside each other, and treated alike, except as to gypsum.

CLOVER HAY PRODUCT.

	Per perch. lbs. oz.	*Per acre.* Cwt. qrs. lbs.	*Value at 6s. per cwt.* £ s. d.
A. Gypsum,.....	42 0	60 0 0	18 0 0
b. None,.....	14 0	20 0 0	6 0 0

CLOVER SEED PRODUCT.

	Clover straw, per perch	Clover straw, per acre.	Am't at 12d. per cwt.	Seed per perch.	Produce per acre	Value at 12d. per pound.
	lbs. oz.	cwt. qrs. lbs.	£ s. d.	lbs. oz.	qrs. lbs.	£ s. d.
A. Gypsum,.	16 0	22 3 12	1 2 9	0 10½	3 21	5 5 0
b. None,....	3 8	5 0 0	0 5 0	0 2	0 20	1 0 0

OUR CONDITION.

"With the hardiest and most enterprising population on the globe, and a soil unequalled in fertility, we have been so idle, or such improvident cultivators, as to be compelled to depend on other nations for bread. Politics, and trade, and the mysteries of banking, and the haste to be rich, and the speculations in stocks and in western lands, have employed thousands, we might say millions, who would have been more honorably, and, it seems likely to turn out, more profitably employed, in following the plough, or in wielding the axe and hoe."—*Gen. Farmer.*

Men have sought too much to live by the labors of *others*, and not by their *own* industry. They have built on foundations of sand; and now that the rains fall, and storms come, and beat upon their castles, they tumble into ruins. Industry is the only sure foundation, at least for the farmer and mechanic, to build upon.

The moisture in the soil influences its temperature; and the manner in which it is distributed through, or combined with, the earthy materials, is of great importance to the nutriment of the plant. If water is too strongly attracted by the earths, [as by clay,] it will not be absorbed by the roots of plants; if it is in too great quantity, or too loosely united to them, [as in sands,] it tends to injure or destroy the fibrous parts of the roots.—*Davy.* Thus good soils contain clay, sand and lime.

Absorbent properties of soils.—The power of the soil to absorb water, by cohesive attraction, depends in a great measure upon the state of division of its parts; the more divided they are, the greater is their absorbent power.—*Ib.* Hence the benefit of frequently pulverizing the surface among hoed or drilled crops, of thorough ploughing, and of pulverizing with the harrow and roller, to avert the effects of drought.

The power of soils to absorb moisture from air, is much connected with fertility. When the power is great, [as in those that have a due mixture of sand, finely divided clay, and carbonate of lime, with some humus, and which are kept so loose and light as to be permeable to atmospheric air,] the plant is supplied with moisture in dry seasons; and the effect of evaporation in the day is counteracted by the absorption of aqueous vapor from the atmosphere, by the interior parts of the soil during the day, and by both the exterior and interior during the night.—*Davy.*

TILLAGE HUSBANDRY.

RYE,

Ranks next to wheat, as a bread corn; is used for that purpose in the entire northern part of the continent of Europe, and very extensively in the northern states of America, particularly in New-England, where it is generally combined with corn meal in the fabrication of bread. In Holland, and in some of the German states, rye bread is fed alike to horses and their drivers. It is considered wholesome, and the husk possesses an aromatic and slightly acidulous flavor, which renders it agreeable to the palate. The bran should not, therefore, be entirely separated from the flour.

Soil.—The soils designated by Von Thaer as suitable for rye, and because, perhaps, that they are illy adapted to other crops, contain from 18 to 23 per cent of clay, from 75 to 80 of sand, little or no carbonate of lime, and but 1½ per cent of humus, or vegetable mould. They are considered the lowest rate of sandy lands, and in the comparative estimate of value, as worth only one-fifth of the first class of strong wheat lands. A large body of the lands in the northern and middle states are therefore proper lands for this grain. In truth, it is generally sown upon soils that promise little return in better crops, and is too often left to shift for itself. Yet it nevertheless will repay good treatment, as well as more favored crops. It is the only grain that will grow upon soils containing more than 85 per cent of sand.

Cultivation.—Farms that will not produce good wheat, may be made to produce good rye; yet to render it profitable, it should not be made to follow, in consecutive years, as it often is, in the same field—sown with wheat, in the proportion of one to thirty of seed, rye is affirmed to be beneficial to the product of the wheat, affording shade and shelter, and protecting the latter from mildew, much improving the sample of the grain, and, upon light soils, often giving an increase of two bushels per acre in the product. This fact, which we take from No. 6, vol. ii., of British husbandry, may afford useful suggestions to those who raise wheat only for their household consumption. Rye will not thrive upon a wet soil. Its general treatment nearly resembles that of wheat.

The *seed* is generally sown early in September, sometimes in August, and sometimes, in an emergency, in November. It requires more covering than wheat.

When sown early, rye is often depastured in autumn, by calves, sheep, and even cows, without prejudicing the crop, and even to its advantage. It is often sown as a soiling crop, to be cut in spring and fed to stock.—The quality of the flour is improved by the grain being cut before it has become perfectly hard.

Industry.—It is a serious misfortune to thousands, in these times, not to have been brought up to labor. Head work, without the co-operation of the hands, is becoming rather an unprofitable business to many. And

yet, with these facts staring us in the face, we are not willing to profit by the lesson which they teach—we want our children to live without work though we know it has been the only substantial means of our success in life. Let us raise the superstructure for useful ends, and then bestow upon it all the embellishments that our means, and sound judgment will permit—teach our children how to provide for themselves honestly, before we bedeck them with gewgaws that serve to inflate their vanity, and to sink them in the estimation of wise men.

HAY-MAKING.

Philosophy teaches, and many years experience has confirmed us in the correctness of her teachings, that not only clover, but all hay in which clover, or any of the succulent grasses, are constituents, should be cured in small grass cocks, not rolled, but formed of layers with the fork. The objections to the old mode of curing wholly in the sun, are, in the first place, that the leaves and finer parts of grasses, dry, crumble and are lost, ere the stems and succulent portions are fit to carry to the barn. In the second place, that an intense hot sun is hurtful to the quality of the hay, that cured in the shade being always the most fragrant and nutritious. Third—it is liable to be seriously injured by the dew, sudden showers, or continued rains. And fourth, it demands more labor than the new mode. We will briefly state our method of management, which experience has induced us somewhat to vary.

Our grass is heavy, averaging, perhaps, 2½ tons to the acre, and abounds more or less in clover. Where this preponderates, or is in any considerable proportion, we endeavor to cut when the clover has just passed the full bloom. The grass is of course succulent and juicy, and the swaths heavy. That which is cut in the fore part of the day, if the weather bids fair, is turned over in swath, but not spread or tedded, after three or four o'clock, in order that the wilted portion may be covered from the dew. If rain is apprehended, it is put into grass cocks, instead of being turned in the swath. The grass which is mown in the afternoon is put into cocks the following afternoon, having been turned in the swath at ten or eleven, if time will permit, or if the grass is very heavy or wet. We never spread from the swath, unless rain falls before it is cocked; and in this case it is made into cocks as soon as the water is exhaled, and the grass wilted. We prefer to leave the cocks undisturbed two nights and one day, and until a fair day, in which the curing process may be completed, and the hay housed. It may stand a week in cocks without receiving any injury, if they are properly made. In the finishing process, the cocks are opened in the morning, say at nine or ten, the hay shaken up, that the moisture, which is now principally upon the exterior of the grass, may pass freely off—it is turned over at eleven to two, and at two to four it is completely cured, and fit to be taken to the barn. Cured in this way scarcely a leaf is wasted, and the hay has a freshness, fragrance and fine color, much to be desired. There is at least ten per cent gained in quantity, and as much in quality.

The practice of the best English, Flemish, and French farmers, says Deane, is to expose their hay as little as possible to the sun. It is carried in dry, but it preserves its green color; and you see hay two or three years old in their market, of so bright a green color, that we should scarcely conceive it to be cured; yet they are in the practice of preserving it for years, and value it more for its age. The cock excludes it from the sun and preserves it greenness; and if a slight fermentation takes place there, the hay seldom heats, and never spoils, in the mow or stack. It is the best mode to make *good* hay.

PATENT SAW-SET.

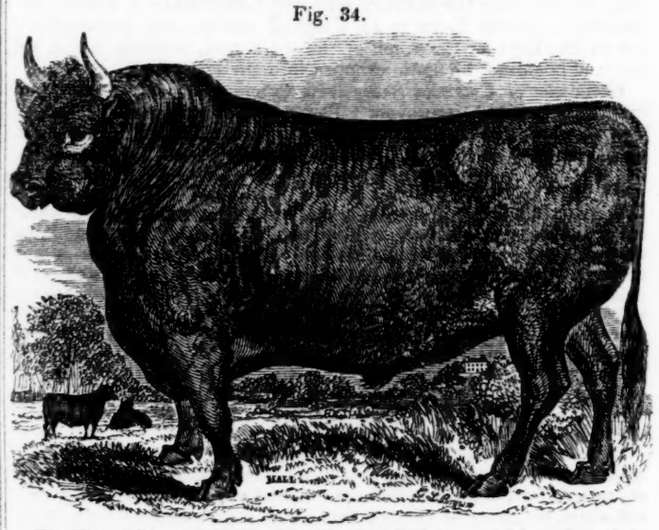
We have received the complement of one of these, from Mr. Stillman, the patentee, of Herkimer county, with which we are highly pleased, and with which any man, or intelligent boy, may set a saw, to any required guage, in ten minutes. Every farmer should keep a saw; and the advantage of having it set and sharpened, which any one may learn how to do in five minutes, with this instrument and a four-penny file, will in a few days compensate for the expense of this instrument, six shillings, besides the satisfaction one ever feels in having his tools in good order.

Fig. 33.

A is a piece of steel, with a sharp corner, across which the tooth is bent, with a screw B, to guage the width of the setting; C is a shorter piece, narrowed at both ends, for coarse and fine saws, and fitted with a screw D. *e* is a thin slide, passing in or out, to stop the tooth at the point at which it should be bent. F is a band, by which A, C, and *e* are held firmly together by means of the screw G. To adjust it to the saw, first loosening the screw G, place the slide *e* so that the bottom of the tooth may come across the corner on A, by the screw D, place C so that the tooth may pass in or out freely, and at such a distance from the corner that it may cover about half the tooth, secure it by the screw G; turn B so that by touching the saw plate, it may set the saw at the desired width. If the saw is hard, let the tooth have still more length to bend in.

NEAT CATTLE—DEVONSHIRE.

Fig. 34.



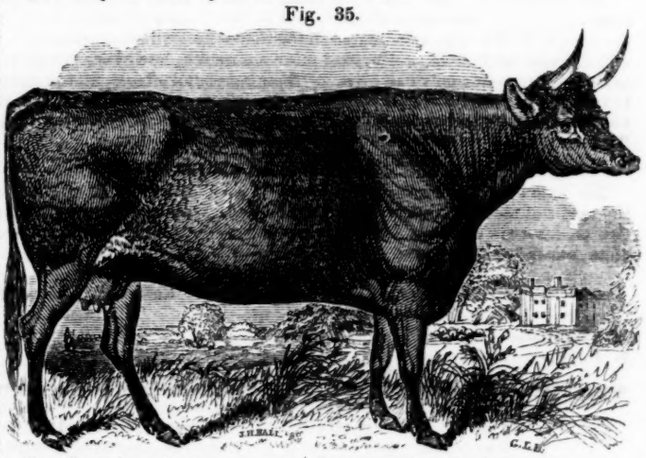
The Devonshire cattle are classed as middle horns, and have long been celebrated for their beauty, activity at work and aptitude to fatten. A description of the fine points of the Devon cattle, will be found in our first volume, page 26. The bull is a great deal less than the ox, and the cow almost as much smaller than the bull. The cow is particularly distinguished for her full, round, clear eye, the gold colored circle round the eye, white horns, mahogany color, and, if waved, the better.

The qualities of the Devon cattle may be referred to three points:—their working, fattening and milking.

As working oxen, upon light soils, or with moderate loads, the oxen are unrivalled for speed. Very few horses exceed them in speed. They are docile, good tempered, and, according to Vancouver, a team of four steers will plough, as a common day's work, two acres a day. Four steers will do the work of three horses, though a horse is ordinarily deemed equal to two oxen. They may be trotted, with an empty wagon, at the rate of six miles an hour.

Very few cattle rival the Devons in their disposition to fatten. In a given time, they acquire more flesh, and with less consumption of food, than most other breeds. Their flesh is of that mottled, marbled character, which pleases the eye as well as the taste.

Fig. 35.



For the dairy, the Devons are acknowledged to be inferior to several other breeds. Their milk is good, and yields more than an average proportion of milk and butter; but it is generally deficient in quantity.—There are those, however, who deny this, and select the Devons even for the dairy. The reader will find the extraordinary products of a Devon

cow, owned by Mr. Holdrich, of Columbia, noted in the current volume of the Cultivator.

There are considerable herds of Devonshire cattle in this country.—The earliest importations were by Mr. Patterson of Baltimore, and by the late Rufus King, of Long Island, who received several individuals, as a present, from the herd of the celebrated Mr. Coke, of Norfolk. Messrs. Hurlbuts, of Winchester, Conn. have them in fine perfection, as have also the Messrs. Garbutts, of Wheatland, Monroe, and several others of our enterprising farmers.

FARM IMPLEMENTS.

The subscribers, of the committee appointed by the State Agricultural Society, to examine farm implements, met on Tuesday, July 10, at Albany, when the following implements were presented for their examination.

1. SLATER'S CORN SHELLER AND GRINDER.

This machine occupies a space of 5½ by 2 feet. It consists of a vertical cast iron balance wheel, with a jagged surface on one side, for shelling corn, upon the principle of Adriance's and other corn shellers, and of a fluted horizontal cylinder, 2½ inches in diameter, working in a concave cast iron bed, for the purpose of cracking corn and other coarse grain. The model exhibited is propelled by manual power, by means of a crank, and a drum is also attached to it, for the purpose of applying horse power. The committee had not an opportunity of satisfactorily testing this machine, but they believe that the grinding or cracking process requires horse or water power to answer the purpose of its construction. Price $30, for sale by Thorburn.

2. BEMENT'S IMPROVED DRILL BARROW.

The improvement consists of an oval globe, instead of a barrel cylinder, which is pierced with holes at proper distances for sowing mangold wurtzel; and when it is required to sow carrot, turnip, or onion seed, a rim, or band, with small holes in it, is attached to the globe, and the seed is dropped at regular distances. The globe is put in motion by a broad iron wheel, which answers the double purpose of supporting the frame, and rolling and covering the seed dropped before it. By substituting for the globe another simple apparatus, it plants corn, peas or beans, dropping from three to five grains about eighteen inches asunder. The committee saw the machine satisfactorily tried, and found it to answer the purposes designed.

3. BUSHNELL'S DRILL BARROW.

This was a roughly constructed implement, made by the proprietor, for temporary use, and comprised two rollers or wheels, placed two feet apart from centre to centre, the forward one ten inches, and the back one fifteen inches in diameter. The frame consists of two curved shafts, which serve also as handles to propel and guide the machine, connected by two cross bars. The coulter is placed near the front roller, and in rear of it is the hopper, which may be adapted to different seeds, and is graduated and operated upon by cogs placed upon the outer circumference of the rear wheel. Although of rude construction, this machine operated well, and the committee are inclined to think that the forward roller, which smooths and pulverizes the ground, and enables the operator to guage the coulter with precision, is an evident improvement. A small rake or brush, precedes the rear roller, and serves to cover the seed, and the rear roller completes the operation. Mr. Bushnell, the inventor, is an inhabitant of Lee, Mass. He thinks his drill can be sold, in complete order, at three dollars.

4. HOYT'S DRILL.

Mr. Geo. A. Hoyt, of Albany, showed the model of a drill box, for sowing different kinds of seeds. The box, or hopper, which may be attached to a hand barrow, has at bottom a graduated hole, which by the application of a strap attached to a drum on a hand barrow, opens and shuts, and lets out the seed at regular distances. Inside of the box is a spring, which forces the seed into the hole. The cost of the box, independent of the barrow, will be from $3 to $5. The committee tried this machine with carrot, parsnip, and turnip seeds, and found that it dropped them accurately.

It is not the province of the committee to decide upon the relative merits of the machines exhibited for their examination; yet they feel it their duty to say, that all the drill barrows they have enumerated are well adapted to drill husbandry, or for garden purposes. As the root culture is extending rapidly among our farmers, and is likely to form a highly valuable improvement in our husbandry, the committee recommend the drill barrows they have named, which are all adapted to manual power, as valuable accessions in the drill or row culture. As connected with this culture, and the garden, they beg leave also to recommend,

5 to 7. TURNIP HOES.

Three patterns of which were exhibited by W. Thorburn; one from Messrs. Adams and Thorp's factory, at Oakhill, [the model of which was described in a late Cultivator, as being presented to the Conductor, by Mr. Collins, of N. Jersey,] price 75 cents—and two kinds from Mr. W. R. Gates, of Lee, Mass. particularly designed for thinning the turnip crop, —price 37½ cents. For sale by W. Thorburn.

8. BEMENT'S CULTIVATOR.

This has been in use for three seasons, and the increasing demand for it is evidence of its usefulness. The frame consists of a centre piece 4½ feet in length, with expanding wings, which can be contracted at pleasure. It has three double pointed shares, which may be shifted for others, turning the mould from or to the plant, with two scarifiers between them. It has a wheel and nozzle in front, to steady it and regulate its depth. It is intended for horse hoeing corn, potatoes and turnips.

9. VAN BERGEN'S CULTIVATOR.

This has a centre and two parallel bars, the latter expandable at pleasure, connected by a simple frame work. It has six shares, so placed as to operate upon different portions of the ground to which it is applied, and the wings of the shares may be turned so as to throw the soil either from or to the grain cultivated. It has a nozzle and wheel in front to regulate its depth, as also double shares in front, to throw the earth both ways, like a double mould board plough, when it is required. The utility of this implement may be judged of from the fact, that the patentee has cultivated twenty acres of corn, and eight acres of beans, with it, the present season, without finding it necessary to employ the hand hoe but partially. The beans are in drills nine inches apart.

These implements have been noticed and figured in the Cultivator. They both work well, may be used in lands free from heavy or fast stones, greatly economise labor, and are admirably adapted to hoed crops.

10. DOUGLASS' WEIGHT POWER.

This is a machine intended for churning, by dash or rotary motion, for washing and for pressing cheese, grinding coffee, pepper, &c. It is propelled by weights, of 712 pounds, which are raised by a winch in two minutes. To the rotary churn, this power gives a graduated and regular action of 30 minutes, to the clothes washer of 15 minutes, and to the dash churn of 12 minutes. Upon the cheese press it gives any required and continued pressure.

The machine consists of a frame of three posts, connected by cross pieces, and of any required height, from six to eight feet. The boxes containing the weights, which latter may be of earth, stone or iron, are kept in place by grooves in the uprights. The machine and its application are certainly new; but whether they will answer the purposes of the dairy, &c. must depend upon its practical application hereafter, and the further improvements which are contemplated. Yet Mr. Douglass has the certificates of a great number of highly respectable gentlemen as to its utility in its present form. The inventor deserves credit for his ingenuity and perseverance, under many adverse circumstances. The cost of the machine, without churn or other aparatus, is from $25 to $50.

11. GLEASON'S HORSE POWER.

This is on the principle of the endless chain, and is built for one or two horses. It is applied to threshing, sawing, grinding, or other purposes of the farm. The machine is substantially constructed, the chain of approved form, and the floor upon which the horses tread easy and apparently durable. Price from $135 to $190.

12. WILSON'S MOWING MACHINE.

The committee regret, that both themselves and the proprietor were disappointed in seeing this machine fairly tested. One of the principal wheels was broken just before the committee reached the field where it had been in operation, and the new wheel which was substituted did not fit well to the other parts of the machine. Where the machine had just operated, the work was well done. This machine is not designed for small and uneven farms; but the committee feel persuaded, that upon extensive smooth bottomed alluvial or prairie meadows it may be made highly serviceable. If the proprietor does not command success, he certainly deserves it, by the indefatigable industry and perseverance which he has employed to perfect his machine.

13. PUDNEY'S REVOLVING HORSE RAKE,

Was seen in operation; and the committee are of opinion, that if managed by an active man, it will do a great deal of work, and do it well. It varies somewhat in principle from the common revolving horse rake, and it is sold by Thorburn at the moderate price of 6 to $8.

14. CONCKLIN'S PRESS HARROW.

This has been described and figured in the Cultivator. The committee did not see it in operation; but from the representations of those present who had used it, including one of their number, they are satisfied that it is a valuable acquisition to our husbandry, particularly on stiff soils, where it may be made to supersede cross ploughings, and be advantageously used for scarifying old meadows and pastures.

The committee will meet again on the third Tuesday in October next, at the City Hotel, in Albany, to examine such implements as may be offered for their inspection.

J. P. BEEKMAN,
A. VAN BERGEN,
J. BUEL.

MISCELLANEOUS NOTICES.

SEED OF THE WHITE PINE.

Robert Burton, of Lewes, Del. is desirous of obtaining half a bushel of seed of the white pine the ensuing fall. It will require thirty-five bushels of cones, or burs, to produce half a bushel of seed. The seeds grow between the scales of the cone; and the latter open about the first of October to release them. The cones should therefore be gathered in September, and after drying a few days in the sun, the seeds will fall out, especially if beaten with a stick. Any person disposed to furnish the seed, may advise the Conductor by letter, post-paid, and state the price for a peck or half bushel, or address Mr. Burton.

As Mr. Burton's letter contains useful information for the inhabitants of the sea coast, as well as of the prairie west, for making plantations of coniferous trees, we subjoin extracts from it. And we beg leave to recommend his example to others, particularly in the districts already indicated. These young forests will in a few years become important as shelter, not only to farm crops and farm stock, and for plantations of more tender trees, but they will become a source of certain and substantial profit—and will in some measure compensate posterity for the reckless havoc we have made of the primitive forests. In the vallies of the Ohio and Mississippi, the white pine, we understand, is seldom found growing. Its value as a building material stands deservedly high; and the pine forests, upon the streams tributary to the Ohio and Mississippi are fast disappearing. Were it known in the north, that the seeds of our coniferous and other forest trees were in demand, at a fair price, our seedsmen might collect and furnish them in any quantity.

"Twenty-five years ago," says Mr. Burton, "I planted half a bushel of clean seed of the yellow pine, on a poor sandy soil, about five feet apart each way, and now I have trees from them that will measure, one foot from the ground, ten inches in diameter, and in height they are from thirty to forty feet. The seed did not all come up. The way I did, as soon as I had gathered the burs, I put them in a loft over the cook-room, two or three feet thick, where they would be always dry and *warm*, and in the course of a month or so the burs had opened, and by threshing them with a small rod the seed fell out. I then took the seed and had them rubbed in the hand, to break the small feathers attached to each seed, and then fanned them as clean as wheat.

"The cheapest way for a person to seed his field with pine, is to plant the seed in rows about fifty yards apart, in a north-easterly and south-westerly direction, so that the north-westerly winds, which here are the driest winds that blow strongly, may send the seed from the trees which will grow in these rows, across to the other. The seed should be planted shallow, if planted with the hoe. If planted in rows fifty yards apart, the best way is to plough the rows, and sow the seed on the top of the furrow, or to harrow the row, and sow the seed on the place—the rains will settle them deep enough in the earth when the ground is broke a little."

GREEN'S STRAW CUTTER.

A correspondent, who dates Fauquier county, Va. and who "is a feeder of nearly 200 head of cattle, upon the *stall and in-door* plan," asks our opinion respecting the application of horse power to Green's Patent Straw Cutter,—and what quantity of hay or corn fodder, it will cut, with such power, in an hour? We doubt whether this machine, as now constructed, would perform much more if propelled by horse, than it now performs by manual power. Little can be gained by accelerating its motion; and the strength of a man propels it without fatigue. A very extensive and intelligent farmer who visited us while writing this, assures us that two smart men may cut five tons a day, of hay, with Green's Straw Cutter, by manual power.

We have heard highly commended the horse power establishment of a gentleman upon Staten Island, in which the power is applied, at pleasure, to cutting hay and fodder, upon an improved machine,—to grinding grain for family and farm use,—to crushing corn cobs and corn, grinding apples or roots, sawing, &c. We have solicited a plan and description of the building and machinery, the cost, &c. from the intelligent and liberal proprietor; and hope to have the satisfaction, ere long, of laying them before the readers of the Cultivator. Such an application of horse power, upon the farm, has been long a desideratum; and we cannot question the willingness of the proprietor to win the gratitude of his countrymen, by making the communication solicited.

ORNAMENTAL EXOTIC TREES.

A correspondent at Newark, Ohio, wishes us to indicate eight tried exotics, other than the European Linden, of the large class, most admired for park ornament, and where they can be obtained. Were we better acquainted with the winter temperature of Newark, we could give more satisfactory answers. The American forest trees of the first class surpass in beauty those of the old continent. The sycamore,* English and Scotch *elms, European larch,* weeping willow,* ailanthus,* European ash, and Oriental plane, are the principal species of large exotics found in our nurseries. Of the second class, the mountain ash,* (*Sorbus aucuparia,*) horse chesnut* and European alder,* are very ornamental. Those marked with the asterisk *, as well as the European linden, may be had at the Albany Nursery, though of some kinds the plants are small.

WHITE OAK AND POST OAK.

J. Seelye, of Sharon, Con. inquires, first, what is the distinction between post oak and white oak, the former being esteemed, at the south, better and far more lasting, than the latter. And second, on what particular day in the year a tree, perforated by woodpeckers, or slightly girdled with an axe, will die. *White oak* is a tree of the first class as to magnitude, and grows in every part of the United States, though in Florida it is found only on the borders of the swamps. It is the only oak, on which a few of the dried leaves persist till the circulation is renewed in the spring. Of all the American oaks, this is the best and most generally used, according to Michaux, being strong, durable, and of large dimensions. The *post oak* resembles somewhat in foliage the white oak, though the lobes of the leaves are broader, and less pointed; and its acorns are not half so large as those of the white oak. The leaf of the white oak has three, and that of the post oak four lobes. This oak belongs to the second class of forest trees, its height rarely exceeding forty feet. It is not found growing north of the neighborhood of the city of New-York, but abounds in the middle states and in Florida. The wood is less elastic, though finer grained, stronger, and more durable, than the white oak: hence it is preferred for posts, and is used with advantage by wheelwrights and coopers. As to the second point of inquiry, we are not aware that there is any *particular* day in the year, and we are sure there is not, when a tree will be killed by the pecking of birds. Trees die either by cutting off the supply of sap, which passes from the roots through the sap wood, or for want of elaborating organs—the leaves—which convert this sap into vegetable nutriment. Cutting through the entire sap wood, at any time in the early part of summer, so as to prevent the ascent of the sap, or divesting it entirely of the leaves, which elaborate this sap, in June, will seldom fail to kill the most hardy tree.

SAXON SHEEP AND WOOL.

E. Tilden, Esq P. M. New-Lebanon, Col. has a flock of 1,000 Saxon, and Saxon and Merino crossed sheep, which he considers of the first grade, and offers a part for sale—the bucks at from five to twenty-five dollars, according to age and quality. Samples of the wool from these bucks, have been deposited, for examination, at the office of the Cultivator.

J. C. Van Wyck, of Fishkill, Dutchess county, has also a flock of 500 prime Saxon sheep, bred with great care, which he wishes to dispose of —price not mentioned.

PRATT'S STUMP EXTRACTOR.

We have received from J. R. Drake, Esq. of Owego, a handbill, which contains a figure and description of this machine, and also certificates of its performance, which we shall forward to our correspondent, J. M. Garnet, Esq. of Virginia. The machine is worked by a pair of oxen or horses, and can advantageously employ five men. It appears from the certificate of H. Hutchinson, engineer on the Chemung canal, that with one of these machines, sixty-eight stumps were extracted between two o'clock P. M. and sunset; and that with another two hundred and thirty stumps were extracted in a day. It is applied to green stumps, as well as to those which are partially decayed, and without the previous labor of cutting the roots. Nos. 1 and 2 are heavy, and designed for extracting green stumps; No. 3 is more compact, and may be transported on common wagon or cart wheels. Four men, says Judge D. with two yoke of oxen and a stump-boat, will extract, and convert into fence, stumps enough for fourteen rods in a day. The price for a first rate machine, with ropes, chains, &c. is nearly $375—without the apparatus the machine is offered at $150, delivered at Albany or Troy.

RUTA BAGA HOE.

We have been presented with a neat little implement for thinning turnips, or other crops, manufactured by Wm. R. Gates, Lee, Mass. It is for sale by Thorburn, at the moderate price of 37½ cents, including the handle.

HOLLOW HORN.

Sylvanus W. Gray, of Middlefield, Ohio, has sent us the following recipe for curing the horn-ail in neat cattle. We publish it, though we confess it smacks too much of quackery. It has too many ingredients, a part of which we suspect are at least useless.

"Take three eggs, same in bulk of black pepper, same of soot, same of salt, same of hen dung, mix with wheat flour till hard enough for pills; make nine, and give one at a time three successive mornings, and intermit three, and give three again, &c."

ITALIAN SPRING WHEAT.

There has been an abundance of this grain sown. It looks well, and, the grain worm permitting, there will be plenty of seed. Mr. H. Stephenson, who writes from North Lake, Mich. shall be supplied. The price cannot now be determined. We beg Mr. S. not to forget the beautiful prairie flowers, the seeds and bulbs of which he promises to send us. Mr. S. says, that fall wheat in his district, with some exceptions, will be a failure. We coincide with him in opinion, that in many parts of the country our reliance must ultimately be upon the spring varieties of this grain.

THE WHEAT CROP.

Our letters from Illinois, Michigan, Ohio, and the far west, are *not* favorable to a great product of the wheat crop, this grain having been seriously injured by the winter; and we very seriously apprehend, that the grain worm, which our legislators have considered too insignificant to notice, will lessen the crop of our own state to a most alarming extent. We do not mean to become croakers, but we seriously believe, that the high anticipations of an extraordinary abundant wheat harvest, which our newspapers have encouraged, will not be realized—this year.

HAY GRASSES FOR THE SOUTH.

Edward H. Bryan, of Vicksburgh, in the state of Mississippi, writes us, that clover will not succeed there, in consequence of the excessive heat of summer; that they want something that will furnish a winter supply for stock, and he begs us to indicate such grasses as will answer, and asks particularly our opinion of lucern. The soil, says Mr. B. is a stiff clay loam, the climate humid, the nights cool. If the tap-rooted clover will not withstand the summer heat of Mississippi, the fibrous-rooted grasses of the north can hardly be expected to succeed. The lucern is particularly adapted to a light, deep and dry soil, and on such a soil we have no doubt it will do well there. It will withstand heat well. We recommend its trial, and also the gama and Guinea grasses, particularly the gama.

SPIKED ROLLER.

Mr. J. Boyle inquires, what should be the diameter of the spiked roller, if made of solid wood? If of plank, what thickness—how long the spikes, and how many rows? The size may depend upon convenience or fancy, and may range from twelve to thirty inches in diameter. Any deficiency in the weight of the roller,—for the spiked roller must be so heavy as to press the spikes or darts into the stiff soil where it is intended to operate,—may be made up by stones or other heavy substance, placed upon the frame. The object is to break and pulverise the ground, and raise a tilth—and consequently the spikes ought to project three inches, and be sufficient in number to affect the entire surface. It will therefore require from five to eight rows upon a roller two feet in diameter. Concklin's Press Harrow, which very much resembles the spiked roller, has 12 rows of spikes.

Indian Pond Scythe Stones are obtaining a decided preference in our market, on account of their superior quality, and are the principal stones now found in our stores. They are obtained at Bradford, Vt. and are manufactured and sold by Filers & Co.

Foster and Van Vleeck's Patent Curve Cistern.—Mr. Foster put down one of these for us last year, which has so far fulfilled the patentees promise, and, for aught we can see, will prove good for a century—as the cement hardens with time. The materials required for a cistern to hold forty barrels, are three barrels of water lime, five loads of cobble or broken stone, or broken brick, and forty bushels sand. Wherever these cisterns have been adopted, we believe they have proved satisfactory, as is indicated by the certificates of many respectable citizens.

Lime, we mean the carbonate, whether in the form of powdered limestone, effete lime, chalk, marine shells or marl, differs in one particular from the other common earths—clay and sand:—it decomposes and disappears in the soil—sand and clay do not. Hence the advantage of re-applying calcareous matters to soils at intervals of a few years—of re-liming, re-marling or re-ashing tillage lands.

CORRESPONDENCE.

BONE MANURE.

J. Buel, Esq.—Dear Sir—I have been highly interested in reading the letters of Dr. Humphrey, recently made public, and as a farmer, particularly so with those relating to British agriculture.

In his 57th No. he remarks:—"The prodigious agricultural resources of the country, are developed, with extraordinary industry, skill and success. The richest and most profitable kind of dressing, which has been tried, and which is a new source of agricultural wealth, to Great Britain, is *bone manure*. In Yorkshire and Lincolnshire, its influence has been almost miraculous," &c.

Now I observe that the richest and most profitable manure to the English farmer, is almost entirely disregarded by the New-York and N. England farmers.

My object in this communication, is to get information. I ask, then, has not the time arrived, when bone dust may be profitably used in the older states, where it can be obtained in considerable quantities, particularly on hills, where it is difficult to carry coarse manures, and in districts, as in this vicinity, where plaster must be carried from 25 to 35 miles by land? If so, I wish to know if they can be prepared for use in common plaster mills? Also, what is the relative value of bones that have for a year or two been exposed to the atmosphere? And finally, in what way can it be best employed? Should this subject be thought of sufficient importance, a little information would be received with thankfulness, by an attentive reader of your excellent paper.

As we are turning our attention to the cultivation of roots, it appears to me we cannot raise the amount desired, without more manure. Permit me to mention one method of making it which I have found profitable, but is greatly neglected by our farmers.

The present is to be an extraordinary season for potatoes, at least for the vines. I find that by carting these to my hogs, and allowing them to work them over, and mix with their manure a few days, then throwing them in a pile to remain till spring, a large quantity of manure can be made. If not thoroughly decomposed, it makes an excellent manure for ploughing in for corn, or dropping in hills of potatoes. If left on the surface of the field, they are nearly lost for manure, and are very troublesome in tilling the following spring.

Straw is often used for this purpose when it should be used for fodder.

Respectfully yours, L. FOOT.

Lee, Berkshire co. Mass. July 15th, 1837.

REMARKS OF THE CONDUCTOR.

We have adverted to the subject of bone manure in our second and third volumes, and stated our mode of obtaining and preparing it. We have been less urgent upon this matter, because we saw little hopes of our farmers regarding this source of fertility, while they remained reckless, as too many of them do, of their dung and other sources of fertility which abound on every farm. The subject shall receive our early attention. In the mean time, in reply to Mr. Foot's questions, we answer, first—the time *has come* for every farmer to husband and apply to his lands, all the means of fertility at his command. Bone dust will not prove serviceable upon clays. It is applied at the rate of 20 to 40 bushels on an acre. Bone mills can only be profitably erected near navigable waters. Secondly—bones can be crushed in plaster mills, so as to answer well. Thirdly—bones that have been boiled are deemed as good as those which have not been boiled, and old bones nearly as good as fresh ones. And fourthly—not only potato tops, but sedge grass, weeds, straw, and every sort of vegetable matter, or earth abounding in it, as that from swamps, ditches, ponds, &c. leached ashes, soap suds, urine, &c. may all be profitably commingled in the dung yards, which should be made concave in the centre, in order to retain the liquids of the yard, and which these vegetable matters will absorb. And the yard should be thoroughly cleaned every spring, and the contents fed to hoed crops.

AN AMERICAN SIROCCO.

Newark, (O.) June 17, 1837.

Dear Sir—On Tuesday the 6th instant a very violent wind, almost a tornado, swept over our country, to a very wide extent, filling the air with a cloud of leaves, dust and other light matters. I was not out during the wind, which lasted some ten minutes, but those who were, said that it produced upon them a remarkable sensation, and nearly suffocated them. A gentleman of Canton, informed me yesterday, that he was on horseback whilst the wind was blowing, and that its effects upon him were similar to those described from the sirocco, in the south of Italy. On his return home, he said, he observed, first that his green gage plum tree seemed to have been scalded by hot water; its leaves were withering and turned black. He inquired of his family, if hot water had not been thrown upon the tree, and on being answered in the negative, began to suspect it was the effect of the wind, and upon extending his observation, discovered that other trees in his garden, and even orchard grass exhibited like appearances; he afterwards noticed like effects upon some of the tender forest trees. In his journey from Canton to this place, about 100 miles, he traced this appearance along the whole distance. I noticed in my own garden, that the *blight* commenced about that time, (upon my ornamental shrubs more than upon fruit trees,) and made rapid progress. A Tartarian honey-suckle withered to the ground, and is dead; a flourishing sumach *(Rhus typhina,)* commenced withering, as though scalding water had been poured upon it; it seems to be now slowly recovering, but the young branches are shrivelled. Many similar appearances can be traced in my garden; the tender points in young branches, in several trees, are thus affected. Are we to attribute the *blight* which for some years past, has been destroying our fruit trees, to such a cause? I will not, however, theorise at present. Our facts are too few for a rational theory as yet; but it would be well that farmers and horticulturists would notice the condition of their trees, and the state of the weather, that should the blight attack them, it may be ascertained whether the cause is atmospheric or otherwise.

Yours truly, ISRAEL DILLE.

NUTMEG POTATOES—LAKE SUPERIOR CORN.

Lake C. H. Ia. July 12, 1837.

Dear Sir—As soon as I can possibly find leisure, I intend to send you a *description* of the several kinds of prairie, as to appearance, vegetation and cultivation. I hope to send you "prairie flower seeds."

I have (to us.) a rare kind of potatoes, called "nutmeg potatoes," which ripen in about six weeks, grow small, about the size, and as smooth as hen's eggs—very dry and rich—valuable for garden culture. Have

you such? Also—Lake Superior Indian corn—which *stools* out like wheat, each branch bearing a small, short ear, of a redish yellow color. The stalks low, may be planted very close, and requires the shortest season of any other corn I ever saw to come to perfection. Perhaps it is not new to you.

Do you know what is meant by "Burr Oak?" The shell of the acorn being fringed or *burred*, and highly prized as feed for hogs.

Yours, &c. SOLON ROBINSON.

[Mr. Robinson will do us a particular service by sending us seed of the potatoes and corn, as well as of the prairie flowers. The *bur*, or *overank oak*, grows in most of the western states—is a beautiful tree, and is distinguished as having the longest leaves, often 15 inches, and largest acorns, of any species of the oak.—*Cond*]

BARNS AND OUT-BUILDINGS.

Weybridge, Vt. June 7, 1837.

J. BUEL, Esq.—DEAR SIR—I noticed solicitations in the first No. of the 4th volume of the Cultivator, for improved plans of Farm Buildings, I herein send one of my design.

Fig. 36.

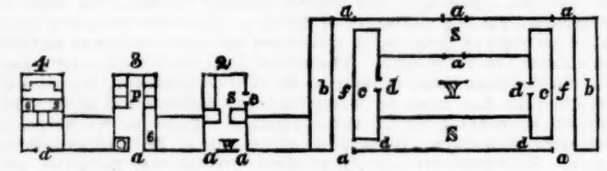


Fig. 2.

EXPLANATION OF THE GROUND PLAN.

No. 1, 1, are two barns 40 feet by 80.
a, a, great doors, 11 feet wide.
d, d, stable doors from 4 to 5 feet.
e, e, stables for cattle, 12½ feet wide, 72 feet long, with manger 2 feet wide.
f, f, floors, 11 feet wide.
p, p, passages from floor to sheds, marked s, which intersect the two barns, at each end, 90 feet long and 16 wide.
b, b, bays for hay and grain 14½ feet wide.
No. 2, Horse barn and wagon house, 25 feet by 40.
d, d, doors, 9 feet wide. m, m, m, mangers, 3 feet wide.
a, passage from waggon house to stable, 4 feet wide.
s, stable, 25 by 22, with a door at e.
No. 3, Swill house and piggery, 25 feet by 40.
d, door, 4 feet wide. o, a cauldron set in brick.
b, bin for storage of potatoes, &c.
p, passage, 5 feet wide, with a feeding trough on each side 20 ft. long.
H, H, 8 pens, sufficient for 32 hogs.
e, e, studs erected to prevent the interference of one hog with another at the trough.
No. 4, Corn house, granary, and tool house or work-shop, with a wool room in the loft, in front 25 feet by 26.
c, threshing floor, 14 feet by 25, with a crib on 3 sides, i, i, i.
d, d, doors, 4 feet wide.
g, a granary, 25 feet by 13, with bins on two sides, b, b.
t, tool house, work shop, &c. with a stairway leading to the wool-room, and trap door for sacking wool.

I would recommend a cellar under the front half building No. 3, for the storage of potatoes and other roots. The loft is convenient for the storage of food and bedding, &c. for hogs.

Loft No. 2, for hay—40 feet space from No. 2 to No. 1, with 3 girts framed in; in front of the building, matched boards reaching to the eaves of each, and if necessary for more sheds; all that will be required to complete them, is to lay roofs between each building, No. 2, 3, 4, 30 feet apart. I would recommend matched boards for the outside covering of each building. Eve troughs attached to the barn to convey the water from the yard Y, which is concave or excavated 3 feet more in the centre than at sides. The buildings all standing 2 feet from the ground with posts 16 feet. Purline plates, and a window in the gable end of each barn, and over the great doors.

The above description is rather a complicated concern, made up and described in too great a hurry. If it should appear in print, (which is not very likely,) it can be arranged in better order, &c. In the front view, the windows are too large in proportion.

You don't get many communications from Vermont, neither can much be expected, as we are very much in the dark as to the improved modes of farming. You will know how to excuse us, for I understand your native place is Vermont. I remain, dear sir, yours in haste,

S. W. JEWETT.

EXTRACTS.

SPEECH OF JOHN JAY VIELE,

Delivered in the State Agricultural Convention, Feb. 3, 1837.

Mr. PRESIDENT—In looking about me, I see assembled a numerous collection of gentlemen, from all parts of this great and wide extended state, comprising much talent, much moral worth, and, if I may judge from the distance they have travelled at this inclement season, I should say they possessed an eminent degree of disinterested patriotism and philanthropy. What, I ask, has called together this numerous convention of agriculturists? Is it to promote the objects and interests of party? Most assuredly not. Agriculture is of no party. It comprises the whole of all parties. Five-sixths of our whole population are engaged in its active pursuits; and the other one-sixth is as dependent upon it, as the branch is upon the roots for nutriment and support. Have they any sinister or personally ambitious views in coming up hither? I trust and verily believe not. The character of this convention, and the reputation of those who compose it, utterly refutes any such imputation—entirely disperses all suspicion. And beside, the cause itself, and proposed objects, is not susceptible of any such perversions. What then, Mr. President, has assembled this truly respectable convention? The question may be answered almost in a word *It is to do the greatest good to the* GREATEST *number*. It is to devise the best plan to improve the agriculture of the state, and in so doing, ameliorate the condition and promote the happiness and prosperity of the whole human family. *Truly*, then, it is a laudable and philanthropic errand upon which we have come. Truly, it is a cause worthy the attention and consideration of all, from the humblest laborer that treads the "vine clad hill," to him who sways the sceptre of government, and directs the energies of a great and free people. It is a fact that will be conceeded by all, that agriculture and the labors of those engaged in it, is the main source and foundation of individual and national wealth. That it is the basis and substratum of all other interests and avocations. On it, all depend—to it, all look for nutriment and support. That in proportion as this interest flourishes, does every other prosper, and when it languishes all others decline. Embracing, as it does, so great a proportion of the community, it gives an impress to the character of our country and all her institutions. The farmers of the state, decide by their numbers, our elections—they control indirectly the government. How important, then, that they should be educated, and fitted for the discharge of those duties with regard to their country, in which they are most deeply interested, that they are now obliged for the want of capacity in themselves, to confide to others. How important that they should be qualified to direct and manage their own political concerns, rather than be nosed and led about as mere automatons at the beck of some professional demagogue. How important for the stability and well-being of our republican institutions, that the standard of education and knowledge should be elevated among so numerous and useful a body of citizens as the farmers of our land They require knowledge in order to enable them to discharge their duties to themselves and families, in the successful cultivation of the earth. Knowledge is essential to enable them to make judicious selections of rulers and to qualify themselves for the discharge of the multifarious civil duties that necessarily devolve upon them.

With this view of the subject, the question naturally arises—how shall the evils of which we complain, be remedied? How shall so desirable an end be attained? I answer, firstly, by the establishment of schools, liberally endowed by the state; where the sons of farmers can be educated in a manner suitable to their occupation. It was wisely said by an ancient Grecian philosoper, that boys should be first taught that which they intend to practice when they become men. So the sons of farmers should be sent to a school where agriculture is taught as a science,—and where the advancement and perfection of that science is the primary object, and where a practical application of all the sciences shall be made to the useful purposes of life,—where the mind shall direct the hand, and where the beauties, the properties and the treasures of the earth shall be developed to the youthful mind; in such a manner, that it shall not forever thereafter be lost, but shall be carried with him into the world, into the field and the workshop; shedding its light and diffusing its blessing upon all within the reach of its influence.

But shall I be told, and do I have it urged as an objection to the establishment and endowment of such institutions, that we have already academies and colleges endowed upon a liberal scale, where all that desire it may receive an education? I grant it—and to the honor of our state be it said. But this fact, instead of being a reason against, is a strong and forcible argument in favor of, the proposed plan.

For I maintain that these institutions, although useful in their sphere, do little or nothing to promote the great and noble object which we have in view. The favors and bounties of government should be dispensed with an equal and impartial hand. And if I show that the literary institutions of the state, that have been endowed by appropriations from the public treasury, to which the farmers are the main contributors, are, from their nature and organization, calculated to benefit and build up a particular class in community; and that class not, perhaps, the most useful

and productive, to the exclusion of the great body of the people; then, I think it will be conceded, that it is high time that the attention of our legislators and those entrusted with the administration of government, should be directed to the subject, to the end that the evil may be remedied, and equal and impartial justice done. And in pursuance of this subject, I must remark, without wishing to disparage the literary institutions of the state, that their tendency is not to diffuse general science among the laboring and productive classes, but to build up a literary aristocracy in the country. They are peculiarly calculated to prepare young men for the learned professions. They make good lawyers and good physicians, and they elevate the clerical character of the country; but it is very clear to my mind that they contribute very little towards improving the agriculture of our country; but on the contrary, their influence is to abstract all the young men of talent from the pursuits of agriculture and the mechanic arts; and merge it into the professions. They are filled mostly by the sons of the wealthy and most aristocratic part of community, among whom the honest yeoman and his profession is in bad repute; and the son of the farmer who, perchance, finds his way into them, soon ascertains that the occupation which has given him sustenance, is derided, and viewed as menial and slavish, he consequently imbibes a disrelish, and, perhaps, a disgust for it; and he hies away to the office of some lawyer, or the shop of some apothecary, and there learns to get a livelihood out of the honest earnings of a less respected class in community. And if, perchance, he does not take to one of the professions, as a general rule, his habits of industry are destroyed, his taste is vitiated, and he spends the remainder of his life a useless drone, a burthen, and I had almost said, a nuisance in society. The consequence and effect of this state of things, is, to protect and encourage the professions, to elevate them in the public eye; and on the other hand, to depress and discourage the business of agriculture and the mechanic arts generally.

With such effects, and under such discouragements, is it longer matter of surprise, that the first and best pursuit of man should be brought into disrepute and languish for want of the necessary stimulus and support? Is it longer to be wondered at, that the sons of farmers and mechanics should forsake the healthy, invigorating labors of the field and the workshop for the law office, the banking house, and the counting room? It is a matter of notoriety, and a lamentable fact, that almost every other occupation is considered more honorable, or more genteel than that of the farmer. The consequence is, a general abandonment of its pursuits, by all the ambitious youth of the country. This is an evil of great magnitude, and the cause is to be found in the want, or the absence of that knowledge in the agricultural community, that alone elevates character, exalts the human species, and renders man truly respectable. An elegant writer has said, and it has ripened into axiom, that "knowledge is power,—knowledge is wealth,—it is the philosopher's stone—the true alchemy that turns all it touches into gold. It is the key that unlocks the store-house of nature and discovers the hidden treasures of earth." Without it man would not be distinguishable from the brute; and in proportion as he is possessed of it, in the same ratio is he elevated above that lower order of creation.

That science has already done much to improve and promote the condition of our agriculture, cannot be controverted. To her she is indebted for almost all the improvements that have been made in tillage and the rural arts. To her she owes the introduction of the improved cast iron plough—the roller—the cultivator—the threshing machine—the hay press, and the whole host of labor-saving machines, that have lessened the toil of the husbandman and increased the productions of the earth. Another triumph of science, we have also this day witnessed, in the recent invention of the silk reel and spinner; which promises to be of immense value and utility, in this new and interesting branch of rural industry.

The benefits that will accrue from the establishment of public schools where agriculture shall be taught as a science and an art, are incalculable. There can be applied the well settled principles of science, in the invention and introduction of improved farm implements. There, the nature and qualities of soils can be learned, with the best methods of renovating and improving them. There, the physiology of plants, and the nature and habits of the whole vegetable kingdom, can be made thoroughly understood. There will philosophy, chemistry, botany, mineralogy and geology, unite in their contributions, to the advancement of man's highest interest. There, the principles of mechanics can be taught, and the inventive genius of our country elicited. There, can be learned the science of entomology, or the nature and habits of the various tribes of insects, that prey upon and often destroy the farmer's hopes; with the best remedy or preventives for such depredations. In schools of this kind might also be taught the science of veterinary surgery, or the nature of the diseases of domestic animals, and the remedies. By a general diffusion of knowledge on this subject, thousands, yea, tens and hundreds of thousands, might annually be saved to the community, that is now lost through a miserable, beggarly system of quackery.

Much more might be said of the advantages to be derived from institutions of this kind, were it deemed necessary. That they are sources of much public good, fountains from which flow health, wealth, and all those attendant blessings which enrich a country and ennoble the human species, cannot be doubted by any that have examined and reflected upon their utility; or have witnessed or become conversant with their operation and effects in Europe. There they are no longer considered experiments. France has long had her schools for the promotion of agriculture and the mechanic arts. In Prussia, where perhaps as much or more is doing to promote the cause of science, at perent, as in any other country, agricultural schools are founded and supported by the government. Germany, too, has her schools devoted to the improvement of the soil and the mind. And the advanced state of her agriculture and of science, within her borders, attests the wisdom of the policy, and is but an earnest of what might be done in this free country.

The school established by Fellenberg, in Switzerland, the result of the efforts of a single philanthropic and public spirited individual, challenges the admiration and the emulation of the world. His great aim was to "produce *men*, not mere *scholars*. The leading principle of his system is, to unite physical, moral, and intellectual education, and to form all the faculties into one harmonious system, corresponding with the capacities and destination of the individual." Young men are sent to this school from all parts of Europe and even America. Its influence is more or less felt throughout the civilized globe. Cannot the great state of New-York, empire as she is in wealth, population and extent, do as much to promote the diffusionof science, among the productive classes, as has one individual in Switzerland? Will she not awake to her interest and her honor, and do as much as has been done by the despotic governments of Europe? The character of our agricultural community will never be elevated much above what it now is, unless schools are established particularly adapted to that object. And how shall schools be established, except through the munificence of the state? It has ever been the policy of all wise governments to promote the sciences and encourage the arts. And shall agriculture, the greatest and most complicated of all the sciences, and the most useful of all the arts, be left to languish and decline, or even to remain stationary for want of the fostering care of government?

Another method by which our interests can be promoted, is through the agency of societies. That united and concentrated effort can do more towards accomplishing any general object, than the exertions of insulated individuals, does not admit of a doubt. We have evidence of it in the associations that are almost daily formed, to promote the great objects of humanity and benevolence. The awarding of premiums for any improvements that may be made in labor-saving implements, or machinery, and also for the production of the greatest results in tillage with the least expense, would give an impulse, and excite a general spirit of rivalry and competition, that could be productive of the most beneficial consequences. Does any one doubt the utility of these associations? Let him turn his attention to those countries in Europe where they have been established, and see the cold and barren earth made warm and fruitful, her productions quadrupled, and the moral and intellectual condition of the people correspondingly improved. Look at those districts in our own happy land, where attention has been paid to this subject, and societies of this kind kept organized, and compare them with those where it has been entirely neglected. The contrast is too striking, and the difference in the general appearance of the country—the wealth of its inhabitants, and the social condition of the people, is too great to require one more word by way of illustration.

But here again a difficulty presents itself. Societies of this kind cannot be maintained without funds, and funds cannot be obtained without the aid of the state. The question then arises, will the state contribute to an object so nearly allied with its glory and prosperity? The present is a time auspicious for making such provision, for the advancement of this cardinal interest, as shall augment the wealth, promote the happiness, and redound to the honor and glory of this great state.

The state is about to receive from the United State's Treasury, nearly six millions, as her quota of the surplus revenue. Why not appropriate a part of the avails of this sum for the endowment of a State Agricultural School, and for the encouragement of societies? The amount so appropriated, would soon be returned with compound interest into the treasury, by the increased revenue that would be derived from canal tolls and taxes, in consequence of the stimulus that would be given to agricultural industry. Soon would the productions of the state be quadrupled; and instead of the greatest agricultural country in the world, being importers of breadstuffs for our own consumption, we should be exporters, and to a large amount. It is fact, that speaks volumes in favor of an increased attention to this subject, and of the necessity of improvement, that we, who but a few years since threatened to reduce Great Britain to a state of starvation, are now importing, not only immense quantities of her breadstuffs, but even hay, to supply a population scattered over an immense territory of the most fertile lands beneath the sun.

It is perfectly proper, that in accordance with the publicly expressed voice on this subject, that a part of this money should be appropriated to the improvement and promotion of common schools—those nurseries of virtue and intelligence. In no way, perhaps, could so general a benefit be derived from it; but, Mr. President, I do most solemnly protest against

our incorporated academies and colleges receiving these funds, to the entire exclusion of schools of agriculture. This consideration appeals to our sense of justice and equity, with great force. It arouses our feelings of philanthropy and patriotism, and calls up the republican principle, that government is instituted for the good of the many, and not the few. Why, I ask, should institutions already endowed, and whose benefits are enjoyed mainly by the aristocratic few, receive this boon, to the exclusion of that great body of the people, whose interest is identified with the successful cultivation of the soil?

Demonstrations too of public opinion have long and often been made on this subject. And we all profess to be governed more or less by public opinion, especially when acting in a public capacity. Convention after convention has been held in this hall—resolution after resolution has been passed by the people in the several counties of the state—petition after petition, without limitation as to the number of signatures, have been presented to successive legislatures; and all asking for an appropriation for this great cause. Report after report has been made in favor of this subject, by committees of each house, and still, for want of time, or understanding, or some other cause, it has not been brought to a successful result. And while on this subject, I cannot but notice with respectful acknowledgments, the situation of that public sentiment, in the enlightened view that was taken of this subject, in two successive messages by the present executive of the state. In touching upon this topic, his language is so happy, and his deductions so clear, that I will take the liberty of presenting to the convention the following extracts:—In 1833, he says—"From the consideration of these important subjects, I pass to one of *greater* and more general interest, lying more directly within the reach of our legislative action, and demanding from us a particular attention. Agriculture was undoubtedly the primitive pursuit of man in a civilized state of society, and seems to be indicated to them by Heaven, as their best employment. Vigor of body and purity of mind are eminently enjoyed by the husbandman. Without meaning to disparage any class of men, or to deny a due proportion of public virtue to all, history and experience warrants the assertion, that the cultivators of the soil have ever been among the first to cherish, and the last to abandon free institutions. It is not, however, for this reason that agriculture presents peculiar cliams for your guardianship. It not only furnishes occupation to a much greater portion of our citizens than any other department of labor, but it supplies the materials for all others. It must be regarded as a matter of some surprise, that an employment in which so great a number of the human family are directly engaged, to which all look for their daily bread, and upon which commerce, manufactures and the mechanic arts—indeed, all the various pursuits of mankind—so necessarily depend, should not have risen to a still higher consideration than it has yet attained, and received from those entrusted with power of legislation, more liberal aids.

"The numerous agricultural societies organized in the several counties in this state, in consequence of our legislation, flourished for a season, then languished, and are now generally dissolved. The interest of agriculture was, to a considerable extent, promoted by these societies. The contributions from the public treasury, distributed principally in premiums, gave a sudden impulse to agricultural industry, and induced many laudable efforts among farmers, not only to excel in their productions, but to introduce valuable improvements in husbandry; yet it has been questioned whether the benefits derived were of such an extensive and abiding character, as might have been realized by a different application of the fund derived from the government Agriculture is a science as well as an art: and both must be systematically cultivated and widely disseminated, before it would attain a high degree of improvement. The general intelligence and individual enterprise of those devoted to the pursuit, have carried the art as far, perhaps, as could reasonably be expected without a better knowledge of the sciences connected with it. With a salubrious climate, and fertile soil; with extensive regions but partially brought under the power of cultivation; with rising manufactures and a flourishing commerce, demanding the surplus produce of husbandry; with a population full of enterprise, and distinguished for native skill and practical talents, we may reasonably expect great advantages from the cultivation and diffusion of the sciences connected with the art. The *subject appears to me in every respect worthy of your attention, and to merit a liberal encouragement.*"

In the annual message of 1834, we find the following language:—"The subjects connected with the business pursuits of our constituents, next claim our notice. Among these, agriculture stands first in the order of nature, as well as in the rank of importance. It contributes so essentially to wealth, that the early writers on political economy regarded it as the only source of wealth. It furnishes the means of human subsistence, and supplies most of the materials for manufactures, and the chief articles of commerce. When the labor of the farmer is bountifully rewarded, all other kinds of industry partakes of its success; whatever therefore, is done by the government for the agricultural interest, redounds to the benefit of every other. There is no other occupation which is so diversified in its objects, and requires such various knowledge to conduct it skilfully, as that of agriculture. This knowledge results from experiments in all climates, soils and seasons, and is consequently to be derived from different countries. It receives large contributions from the mechanic arts, and from the science of botany, chemistry and natural philosophy. The patronage of the government can scarcely be directed to a more useful object, than furnishing the means of collecting information on this subject, and of spreading it among the agricultural population. A board composed of practical farmers and men of scientific attainments, would possess great facilities for concentrating the scattered information; and the best means of disseminating it among the people, would be afforded by a public institution, under the direction of such a board, when agriculture should be taught as a science, and practically illustrated as an art. The general interest felt for this branch of industry, will recommend it to your favor; and its intimate connection with the permanent prosperity of the state, will make you desirous of contributing to its advancement."

Thus you see, Mr. President, that in accordance with an enlightened public sentiment, has the attention of our legislature been recently called to this subject. Subsequent messages have, in substance, reiterated the above sentiments. It is to be hoped, then, that the legislature will sustain the governor, and respond to the manifestations of public sentiment, by adopting a wise and liberal policy with regard to this important interest of the community.

One more view of this subject, Mr. President, and I close. We come not before the constituted authorities of the state as pitiful beggars at the foot of a throne, nor are we yet reduced to quite that state of vassallage and degradation, as are the boors and feudal serfs of the more despotic governments of Europe; but we appear as the lords and sovereigns of the land, asking, in most respectful terms, "nothing but what is strictly right, unwilling to submit to any thing that is wrong." We are the source of all political power, executive, legislative, and judicial. We constitute the great body of the people—the sovereignty of the land. We bear the burthens of government in peace, we are its shield and defence in war. It is to be hoped, then, that an interest thus important, will receive that attention and fostering care, from the constituted guardians of our rights, that the prosperity of the whole community so imperatively demands. Let the empire state, justly proud of her march in internal improvements, and her splendid monuments of art, also lead the way, and set an example worthy of her sister states, in the encouragement and advancement of agriculture—the only true source of wealth—and soon will the entire face of the country be changed. Our fertile valleys will double their increase, our barren plains become productive, our swamps and marshes be reclaimed, the "desert and solitary place be made glad, and the wilderness blossom as the rose."

MANAGEMENT OF CLAY FARMS.

BEATSON'S SYSTEM.

Knowle Farm, in the neighborhood of Tunbridge Wells, which was a few years ago in the occupation of the late Gen. Beatson, contains about 300 acres of land, of which 112 are arable, and is described as abounding with clay, and retentive of surface moisture, but when dried by the summer heat, it becomes as hard as a brick, and impervious to the plough, unless with a great power of animal exertion, particularly as the general mode is to plough deep. The established rotation in that part of Kent and the neighboring portion of Sussex, is fallow, wheat, and oats, with occasionally clover and rye-grass; and the husbandry appears to have remained unaltered for many ages, with the single exception of substituting lime for manure instead of marl. Upon this system the farm was managed during the General's absence, while governor of the Island of St. Helena; and finding on his return, in the year 1813, "that he had no cause to boast of its profit, he resolved to trace the whole progress of the operations, from the commencement of the fallow to the close of the rotation;" the result of which was, that "having made a series of experiments, to which he devoted his attention during five years, he determined upon *the total abolition of fallows.*"*

In order to effect this, he adopted several new implements, chiefly of his own invention, for a description of which we must refer to his "New System of Cultivation," as we have only seen the scarifier in use. This is of a light construction, and certainly performs well; though upon land

* His experiments were extended to various objects besides the working of the land; particularly to the combinations of different kinds of manure, and the burning of clay, (for which, see our vol. i. chaps. 16 and 17;) but our present extracts only extend to the subject of fallowing, the charges of which he states to have amounted to £16 per acre, thus:—

Labor, breaking up the clover ley and 3 subsequent ploughings,	£3	12	6
Eleven harrowings at ten acres per day,	0	9	0
Manure, one and a half wagon load of lime, between the third and fourth ploughings,	7	10	0
Carting and spreading ditto,	0	6	0
Seed, two and a half bushels of wheat at 10s.	1	5	0
Sowing and rolling,	0	1	6
Rent and taxes for the year of fallow,	1	10	0
Ditto for the year of crop,	1	10	0
	£16	4	0

such as that described by the general, it is worked by a pair of horses, and sometimes more, instead of one.

He conceived that the grand source of all the heavy expenses of the old method might be traced to the fallow itself, and to the mode of preparing it—"by bringing up immense slags with the plough, by reversing the soil, and thus burying the seeds of weeds that had fallen on the surface, by which a foundation is laid for all the subsequent laborious and expensive operations." To avoid these, he therefore thought it necessary to proceed in a different manner—"to only break and crumble the surface soil, to any depth that may be required; to burn and destroy the weeds; after which he would have the land in a fine and clean state of pulverization, and in readiness for receiving the seed, without losing a year's rent and taxes; and all this at a mere trifle of expense, when compared with that which is incurred by a fallow."

In pursuance of this, he reduced the ploughing to a single operation at the depth of four inches. The chief use, indeed, which he made of the plough was to open furrows at twenty-seven inches apart, which was performed by a couple of horses at the rate of three acres per day, and was merely intended to prepare the land for the scarifiers, "which, by passing twice across these furrows, loosen all the stubble and roots of weeds, which are afterwards, with a small portion of the soil, placed in heaps and burned." By these means, together with the more frequent repetition of the horse-hoeing, and the introduction of the row culture, the General assures us "that his lands were rendered much cleaner, and yielded better crops than they did formerly, after all the heavy expenses of lime and fallows."* He indeed, states, that these operations produced the effect of pulverization to the depth of six or seven inches, and their expense was—

Five scarifyings, with a single-horse implement, at 1*s.* 8*d* per acre,	*s.*	*d.*			
	8	4			
Two harrowings, at 10½*d*	1	9			
			s.	*d.*	
			10	1	

that the whole charge of cultivation, under a four-course system upon this plan, including rent was—

		£	*s.*	*d.*
Tares, beans, peas, &c.	per acre,	5	0	0
Wheat,	"	5	0	0
Oats and barley,	"	3	13	6
Clover and rye-grass,	"	2	15	0
		16	8	6

thus only amounting to a trifle more than that of the fallow upon the former plan; that land cultivated upon his farm in this manner has yielded 460 sheaves of wheat per acre, whilst the average produce of the other fields did not exceed 360; and that the *difference in favor of the new method amounts, upon an average*—when wheat is at 10*s.* the bushel—to £350 per annum upon the cultivation of 100 acres —*British Husb.*

OUTLINE OF THE FIRST PRINCIPLES OF HORTICULTURE

BY JOHN LINDLEY, F. R. S., &c. &c.

(*Continued from page* 92.)

VI. FLOWERS.

146. Flowers consist of two principal parts, viz: *floral envelopes* (149.) and *sexes* (VII.)

147. Of these, the former constitute what is popularly considered the flower; although the latter are the only parts that are absolutely essential to it.

148. However different they may be in appearance from leaves, they are all formed of those organs in a more or less modified state, and altered in a greater or less degree by mutual adhesion.

149. The floral envelopes consist of two or more whorls of transformed leaves; of which part is calyx, its leaves being called sepals, and part corolla, its leaves being called petals.

150. The sexes are also transformed leaves. (187.)

151. The calyx is always the outermost, the corolla is always the innermost whorls; and if there is but one floral envelope, that one is calyx.

152. Usually the calyx is green, and the corolla colored and more highly developed; but the reverse is frequently the case, as in Fuchsia, Ribes sanguineum, &c.

153. A flower being, then, an axis surrounded by leaves, it is in reality a stunted branch; that is, one the growth of which is checked and its power of elongation destroyed.

154. That flowers are stunted branches is proved, firstly, by all their parts, especially the most external, occasionally reverting to the state of ordinary leaves; secondly, by their parts being often transformed into each other; and, thirdly, by the whorls of flower-buds being dislocated and actually converted into branches whenever any thing occurs to stimulate them excessively.

155. Their most essential distinctive character consists in the buds at the axillæ of their leaves being usually dormant, while those in the axillæ of ordinary leaves are usually active.

156. For this reason while leaf-buds can be used for the purpose of propagation, flower-buds cannot usually be so employed.

157. Being stunted branches, their position on the stem is the same as that of developed branches.

158. And as there is in all plants a very great difference in the developement of leaf-buds, some growing readily into branches, others only unfolding their leaves without elongating, and many remaining altogether dormant, it follows that flower-buds may form upon plants of whatever age and in whatever state.

159. But to produce a general formation of flower-buds it is necessary that there should be some general predisposing constitutional cause, independent of accidental circumstances.

160. This predisposing cause is the accumulation of sap and of secreted matter.

161. Therefore whatever tends to retard the free flow of sap, and causes it to accumulate, will cause the production of flower-buds or fertility.

162. And on the other hand, whatever tends to produce excessive vigor causes the dispersion of sap, or prevents its elaboration and causes sterility.

163. Transplantation with a partial destruction of roots, age, or high temperature accompanied by a dry atmosphere, training obliquely or in an inverted direction, a constant destruction of the extremities of young growing branches, will all cause an accumulation of sap, and secretions; and consequently all such circumstances are favorable to the production of flower buds.

164. But a richly manured soil; high temperature, with great atmospheric humidity, or an uninterrupted flow of sap, are all causes of excessive vigor, and are consequently unfavorable to the production of flower-buds.

165. There is a tendency in many flowers to enlarge, to alter their colors, or to change their appearance by a transformation and multiplication of their parts, whenever they have been raised from seeds for several generations, or domesticated.

166. The causes of this tendency are probably various, but being entirely unknown, no certain rules for the production of varieties in flowers can be laid down, except by the aid of hybridising (210.)

167. It often happens that a single branch produces flowers different from those produced on other branches This is technically called a sport.

168. As every bud on that branch has the same specific vital principle, (113.) a bud taken from such a branch will produce an individual, the whole of whose branches will retain the character of the sport.

169. Consequently, by buds an accidental variety may be made permanent, if the plant that sports be of a firm woody nature. (98.)

170. As flowers feed upon the prepared sap in their vicinity, the greater the abundance of this prepared food, the more perfect will be their developement

171. Or the fewer the flowers on a given branch the more food they will severally have to nourish them, and the more perfect will they be.

172. The beauty of flowers will therefore be increased either by an abundant supply of food, or by a diminution of their numbers, (thinning) or by both. The business of the pruner is to cause these by his operations.

173. The beauty of flowers depends upon their free exposure to light and air, because it consists in the richness of their colors, and their colors are only formed by the action of those two agents (281.)

174. Hence flowers produced in dark or shady confined situations are either imperfect, or destitute of their habitual size and beauty.

175. Double flowers are those in which the stamens are transformed into petals; or in which the latter, or the sepals, are multiplied. They should not be confounded with *proliferous*, (183.) and *discoid compound flowers*, (184.)

176. Although no certain rules for the production of double flowers can be laid down, yet it is probable that those flowers have the greatest tendency to become double, in which the sexes are habitually multiplied.

177. In icosandrous and polyandrous plants either the stamens or the pistilla are always very numerous when the flowers are in a natural state; and it is chiefly in such plants that double flowers occur, when they become transformed.

178 It is therefore in such plants that double flowers are to be principally expected.

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* On this subject he also observes, that "those who plough deep, and bury the seeds of weeds by the first ploughing, are not aware that, by this outset of their fallow, they lay the foundation of a great deal of labor and mischief, and bring upon themselves the absolute necessity of a fallow, as the only means of eradicating the progeny of those seeds which they have inadvertently deposited deep in the soil. Now, if the whole of the stubble and its roots, with a small portion of the surface soil, *which must contain those seeds*, be collected and destroyed by fire, it is reasonable to suppose that lands might be as effectually cleared of weeds in this manner, as by a summer fallow; besides they would have the benefit of a considerable portion of ashes. Perhaps, also, this mode of burning might have a tendency to prevent the disorders of smut and blight; disorders with which my crops have not been in the smallest degree affected."—2d edit. p. 90.

179. In proportion as the sexes of flowers habitually become few in number, do the instances of double flowers become rare.

180. Double flowers are therefore least to be expected in plants with fewest stamens.

181. Whenever the component parts of a flower adhere by their edges, as in monophyllous calyxes, monopetalous corollas, and monadelphous, or di-, or poly-adelphous stamens, the tendency to an unnatural multiplication of parts seems checked.

182. Therefore in such cases double flowers are little to be expected; they are, in fact, very rare.

183. Proliferous flowers are those in which parts that usually have all their axillary buds dormant, accidentally develope such buds; as in the hen and chickens daisy, in which the bracteæ of the involucrum form other daisy-heads in their axillæ; or, as in certain roses, in which the carpellary leaves develope leaf-buds in their axillæ; so that the flower becomes a branch, the lower leaves of which are colored and transformed, and the upper green, and in their ordinary state.

184. Discoid compound flowers are those in which the central florets of a flower-head acquire corollas, like those of the circumference, as in the Dahlia; the cultivated variety of which should be called discoid, and not double.

185. These two last are so essentially different from double flowers, that whatever laws may be supposed to govern the production or amelioration of double flowers, can have no relation to proliferous or discoid compound flowers.

VII. SEXES.

186. The sexes consist of two or more whorls of transformed leaves, of which the outer are called *stamens*, (188.) and the inner *pistillum*. (191.)

187. They are known to be modifications of leaves, because they very frequently are tranformed into petals which are demonstrably such (149.); and because they occasionally revert to the state of leaves.

188. The stamens bear at their apex an organ called the *anther*, which contains a powder called *pollen*.

189. When the anther is full grown, it opens and emits the pollen, either dispersing it in the air in consequence of the elasticity with which it opens; or depositing it upon the stigma (191); or exposing it to the action of wind, or such other disturbing causes as may liberate it from its case.

190. The pollen consists of exceedingly minute hollow balls, or cases, containing myriads of moving particles, which are the fertilizing principle of the stamens.

191. The pistillum has at its base one or more cavities or *cells*, in which bodies called *ovula* are placed; and at its apex one or more secreting surfaces called *stigmata*.

192. The ovula are the rudiments of seeds.

193. If the fertilising powder of the pollen come in contact with the stigma, the ovula in the cells of the pistillum are vivified, and become seeds.

194. But if this contact does not take place the ovula cannot possibly be vivified, but shrivel up and perish.

195. The phenomenon of vivification takes place in consequence of the descent of a portion of the moving particles (190.) of the pollen into the ovula, where such particles form the commencement of future plants.

196. In wild plants a stigma is usually acted upon only by the pollen of the stamens which belong to it.

197. In this case the seeds thus vivified will, when sown, produce new individuals, differing very little from that by which they were themselves produced.

198. And, therefore, wild plants are for the most part multiplied from generation to generation without change.

199. But it is possible to cause deviations from this law, by artificial means.

200. If the pollen of one species is placed upon the stigma of another species, the ovula will be vivified; and what is called a *hybrid* plant will be produced, by those ovula when they shall have grown to be seeds.

201. Hybrid plants are different from both their parents, and are generally intermediate in character between them.

202. They have little power of perpetuating themselves by seeds; but they may if woody be perpetuated by cuttings (312), buds (354) scions (335.), &c.

203. Therefore, no hybrids but such as are of a woody perennial character can be perpetuated.

204. It usually happens that the hybrid has the constitution and general aspect of the polliniferous parent; but is influenced in secondary characters by the peculiarity of the female parent.

205. This should always be borne in mind in procuring new hybrid plants.

206. Really hybrid plants must not be confounded with such as are spurious, in consequence of their origin being between two varieties of the same species, and not two species of the same genus.

207. Hybrid plants, although incapable of perpetuation by seed, are often more abuncant flowerers than either parent.

208. This is, probably, connected with constitutional debility, (162.)

VIII. FRUIT.

209. Fruit, strictly speaking, is the pistillum arrived at maturity.

210. When the calyx adheres to the pistillum and grows with it, to maturity, the fruit is called *inferior;* as the apple.

211. But when the pistillum alone ripens, there being no adhesion to it on the part of the calyx, the fruit is called *superior;* as the peach.

212. The fruit is, therefore, in common language, the flower, or some part of it, arrived at its most complete state of existence; and, consequently, is itself a portion of a stunted branch. (153.)

213. The nature of its connection with the stem is therefore the same as that of the branches with each other, or of leaves with their stem.

214. A superior fruit, consisting only of one, or of a small number of metamorphosed leaves, has little or no power of forming a communication with the earth and of feeding itself, as real branches have, (89.)

215. It has also very little adhesion to its branch; so that but slight causes are sufficient to detach it from the plant, especially at an early age, when all its parts are tender.

216. Hence the difficulty of causing peaches and the like to *stone*, or to pass over that age, in which the vascular bundles that join them to the branch become woody, and secure them to their place.

217. For the same reason they are fed almost entirely by other parts, upon secreted matter which they attract to themselves, elaborate, and store up in the cavities of their tissue.

218. The office of feeding such fruit is performed by young branches which transmit nutriment to it through the bark, (69.)

219. But as young branches can only transmit nutriment downwards, it follows that unless a fruit is formed on a part of a branch below a leaf-bud, it must perish,

220. Unless there is some active vegetation in the stem above the branch on which it grows; when it may possibly live and feed upon secretions attracted by it from the main stem.

221. But inferior fruit, consisting at least of the calyx in addition to the pistillum, has a much more powerful communication with the branch; each division of its calyx having *at least* one bundle of vascular and fibrous tissue, passing from it into the branch, and acting as a stay upon the centre to prevent its breaking off.

222. Such fruit may be supposed much more capable of establishing a means of attracting secretions from a distance; and consequently, is less liable to perish from want of a supply of food.

223. It is therefore not so important that an inferior fruit should be furnished with growing branches above it.

224. Fruit is exclusively fed by the secretions prepared for it by other parts; it is therefore affected by nearly the same circumstances as flowers.

225. It will be large in proportion to the quantity of food the stem can supply to it: and small in proportion to the inability of the stem to nourish it.

226. For this reason, when trees are weak they should be allowed to bear very little, if any, fruit; because a crop of fruit can only tend to increase their debility.

227. And in all cases each fruit should be so far separated from all others as not to be robbed of its food by those in its vicinity.

228. We find that nature has herself in some measure provided against injury to plants by excessive fecundity, in giving them a power of throwing off flowers, the fruit of which cannot be supported.

229. The flavor of fruit depends upon the existence of certain secretions, especially of acid and sugar; flavor will, consequently, be regulated by the circumstances under which fruit is ripened.

230. The ripening of fruit is the conversion of acid and other substances into sugar.—*(To be Continued.)*

Young Men's Department.

PRIZE ESSAY,

For which the first Gold Medal was awarded to Miss LAURA S. SMITH, of Geneseo, Livingston county, at the late annual examination in the Albany Female Academy:

THE INFLUENCE OF SCIENCE AND LITERATURE UPON INDIVIDUALS AND COMMUNITIES.

Knowledge exerts a powerful influence over the condition of mankind. It constitutes the great difference between the savage and civilized, the degraded heathen and the honored philosopher. It is not only "power," but pleasure, wealth, and glory. The bright halo, which surrounds European nations, and which encircles with almost equal brilliancy the rising empire of the west, is an emanation from the knowledge gathered by the labor of centuries. The present age is characterized by general improvements in the arts, advancement of society, strength, refinement, and elevation of intellect. The spirit of analysis and investigation, which are abroad in the land, have enabled man to pierce far into the depths of science, and unfold the mysterious laws which govern the universe. By an

acquaintance with the general rules, which govern matter and mind, the power of man over the material and immaterial universe, is greatly extended, and, by a cultivation of his taste and imagination, his nature is polished and refined. To *acquire* a knowledge of the laws which govern matter and mind, patient and long continued investigation is indispensable. A large collection of facts must be made before the mind can arrive at correct conclusions, or ascertain the principles upon which nature acts.

To bring the sciences to their present state of perfection, man has entered the burning and sandy plains of the equatorial regions, exposed to danger from wild and ferocious beasts, and from his fellow-man, more savage than they. He has gone from the land of the orange and the vine, to the home of the storm and the tempest, the dwelling of a winter that knows no spring. He has traversed broad vallies, and climbed barren and rugged eminences. Exposed to storm and wind and raging tempests, he has pursued his onward course reckless of danger; he has disregarded the enticements of society, forsaken the friends and companions of his youth, and sought, in his lonely chamber, during the brightness and beauty of the day, and the darkness and stillness of the night, for eternal and immutable truth. Disregarding opposition and prejudice, sacrificing his own natural feelings of repugnance, he has visited the solitary grave and disinterred its silent occupant, to discover the matchless skill displayed in the structure of the human frame. But the results of his labor are glorious, the triumphs of the physical sciences are magnificent. They have enabled man to command the elements, and convert them into servants to do his bidding, to ride upon the trackless surface of the mighty ocean, and guide with certainty the stately ship to its destined port; to rise beyond the heights where the proud eagle loves to soar, and while sailing in the ethereal regions, to contemplate the beauties of his native earth. By the aid of science, they who pant beneath the burning rays of an equatorial sun, refresh themselves upon the ices of the polar regions; and they who dwell in barren and desolate countries, feast upon the delicacies which nature loves to pour upon the temperate and torrid zones. Physical science has formed the printing press, which, like a mighty luminary, is sending forth its benign beams upon the stormy surface of the moral deep, and shining into its darkest, and lowest recesses. Man has been enabled to analyze substances before deemed elementary, to melt the most refractory, and light into a blaze the most dense. The brilliant lights which existed in former days only in fairy visions have now become reality; they blaze along our streets and illumine our splendid mansions. Time and space are annihilated; with almost breathless speed the self-propelling car moves onward to its place of destination, speedy and powerful, yet yielding implicit obedience to the directing hand. Broad lakes and majestic rivers are covered with beautiful and rapidly moving steamboats, pursuing their onward course, independent alike of wind and tide. Diseases which formerly spread desolation and despair wherever they appeared, now yield to mild and simple remedies prepared by the scientific. Not satisfied with researches into the mysteries of this earth, man has entered the regions of space, and wandered far over its wide and trackless domain. He has ascertained the distance, magnitude and motion of those bright and glorious orbs, which roll in an unchanging course around the dazzling king of day. He has gazed with eagle eye upon that shining luminary, and ascertained with mathematical accuracy his distance, dimensions and exact situation amid the wheeling spheres which surround him. He has, by accurate observation, learned the situation of multitudes of those distant stars which twinkle in the blue vault of heaven. Thus in a thousand ways have the physical sciences ministered to our wants and excited our admiration.

Investigations of the immutable and eternal truths which form the exact sciences, expand and strengthen the mental faculties. Owing to the nature of the proof, the precision of the definitions, and the caution requisite to proceed one step in the argument, these sciences are admirably calculated to form habits of correct and systematic thinking, and sound reasoning. When combined with the physical sciences, they enlarge infinitely our conceptions of that God who is the origin of all truth.

Knowledge of the laws which govern the human mind, is of still greater importance, than attainments in the physical or exact sciences, and promises, if attained, more splendid results. The mind of man is the recipient of all his knowledge, and the laws which govern it, are of the greatest importance to all classes of society. As the mental faculties are not cognizable by the external senses, and the principles by which they are governed are not capable of demonstration, an acquaintance with them has been deemed impossible. But the little advancement made by the ancients, is owing rather to their mode of investigation, than to any real difficulty of the subject. Formerly philosophers speculated upon the essence of mind, and the manner in which it acts, and not until recently have they entered upon its investigation, by collecting facts and deducing principles therefrom. Mental science is even now little understood, but the acquisitions already made are sufficient to afford great advantage to all who would influence the minds of others, or improve their own. By dwelling upon the operations of mind, man becomes accustomed to the consideration of abstract subjects, a new field of knowledge is opened to him, in which he can luxuriate, whether in a bustling crowd, or alone in silence and darkness.

By pursuing the sciences, man is rendered a systematic thinker, a close reasoner, and an accurate investigator. His memory is strengthened by retaining facts, and his powers of association and abstraction are fully developed by exercise. But though he may have made great advancement in science, and by imitating the operations of nature, may have acquired extensive power over the material world, his manners will be unpleasing if the finer feelings of the soul are not cultivated. The mind which has received strength and precision by attending to scientific subjects, requires to be embellished and ornamented by the cultivation of the taste and imagination. Science forms a solid base, but the temple is incomplete, without the beautiful and ornamental decorations of literature. The individual whose taste has been sufficiently cultivated to relish the productions of mind, finds in them the most agreeable relaxation from the active duties of life; they are companions in his lonely hours and consolations in affliction. He feels a thrilling pleasure when listening to the eloquence of the orator, or perusing the works of the gifted author; he discovers beauties which are concealed from the minds of other men. Nature's lovely scenery fills him with delight. The broad expanse of heaven, the romantic vale and "cloud-capt eminence," the foaming cataract, and the "dark, unslumbering" ocean; all fill his bosom with the most rapturous emotions, for his feelings have received a gentler tone from cultivation. The rich and varied stores of literature, accumulated by the brilliant geniuses of all preceding ages, are open to his admiration. He lives with those who have been; he holds communion with the master spirits of other times, and finds in them a congeniality of feeling he may seek in vain among the living. He is never lonely, for his mind has sources of enjoyment within itself. When age has dimmed the lustre of his eye, and rendered dull the acute perception of his ear; when the pleasures of sense have ceased to gratify, and all the fond visions of youth have vanished; when ambition has lost its enticing sway, and youthful joys, and manhood's hopes, have proved alike unsatisfying, then the literary man has a never failing fountain of delight. His volumes are still left, and his enjoyment of their treasures increases by indulgence. The beautiful sentence, the classical allusion, and the sublime sentiment, still awaken the purest emotions of pleasure.

If the literary man become an author, he exerts a mighty influence over his fellow-men. Monarchs may command the wealth and labor of their trembling subjects; generals may lead thousands to glory or an untimely grave; but the author rules the *mind*, and with a sceptre more powerful than Cromwell or Bonaparte ever swayed. A nation may acquire honor by its extensive conquests, its unlimited commerce, and boundless wealth; it may, by superior strength, exact the submission of many surrounding countries; it may be celebrated for the bravery of its warriors, the skill of its generals, and the vastness of its internal resources; its sails may whiten every port, and its flag wave triumphantly over sea and land; but, though these may gain the applause of the multitude, intellectual greatness, the brilliant productions of mind, ever receive the highest admiration of the soul, the purest homage of the heart. The literary works of a nation are the only lasting monuments which can be reared to its memory: the country itself may be desolate, the lights which once shone brightly in its halls of pleasure may be extinguished forever; the people may be degraded and oppressed, or even extinct, yet the country will live in its literature "till time shall be no more." When the beautiful edifices, the splendid temples and stupendous structures of fallen Greece are entirely destroyed, by the relentless hand of time, its literature will receive the just tribute of honor, now paid it so freely, by all nations. The scientific acquisitions of a country soon mingle with the common mass of knowledge, but its literature is exclusively its own. The writings of Homer will never cease to spread a bright halo around his native land; and those of Virgil will be associated with Rome until the "last syllable of recorded time." Literary men exert a no less powerful influence over their contemporaries, than over succeeding generations. The man of taste forms the public opinion and guides its decisions; his mind is the model for thousands.

Literature possesses a remarkable ascendency over the morals of a people. The pure and elevated feelings of a community whose taste is cultivated, and imagination refined, can never allow those grosser crimes which fix a foul stain upon a nation's glory. The literary find no pleasure in those scenes of licentiousness, in which so many degraded beings love to mingle.

Thus does literature delight and captivate the intellectual being, and elevate him to the head of created intelligences. It perpetuates the refinement from which it springs, affords pure and lasting enjoyment to man, and immortalizes a nation. Physical science improves man's condition by the power it confers over the material universe; literature refines and polishes the manners and feelings. The study of *science* strengthens, that of *literature* elevates and purifies, the intellect. Truth is the presiding genius of science, beauty of literature. The former is the handmaid of the *useful*, the latter of the *fine* arts. Both are requisite for the full development of the character. If the sciences are too exclusively

pursued, they unfit man for society. The mind accustomed to dwell upon abstract and general principles, without the cultivation of the taste and imagination, is not susceptible of the softer and gentler feelings, so necessary in the interchange of thought and sentiment. On the contrary, the study of literature only, renders a person too imaginative and too fanciful for the ordinary avocations of life. The luxurious and beautiful foliage of the tree, becomes too ponderous for the slender trunk, and the first rude wind which sweeps by, prostrates it to the earth and destroys its exquisite loveliness. He who lives too exclusively in the ideal world created by his fertile imagination, is not prepared to enter the scenes of life, where he will be exposed to hardships, misfortunes and unkindness.

The *combination* of science and literature alone form a perfect character. Their *united* influence is requisite to elevate society to the greatest height of civilization and refinement. Both should receive a due proportion of attention, in all systems of education in which the full development of the intellectual faculties is desired, rather than the production of a particular genius. The mind should not only be rendered systematic, accurate, and powerful; but a correct taste should be formed, and the imagination properly directed; more particularly in *this* age, when the triumphs of science are attracting the attention of all, and withholding it from the more quiet walks of literature. Man should be taught to discern the really beautiful and sublime, to estimate the productions of intellect, and enjoy the enduring pleasure which they afford.

When both science and literature receive the attention they respectively claim, great and eccentric geniuses may be known no more; the cold, accurate mathematician; the ardent, enthusiastic, sensitive writer; the abstract metaphysician; and the trifling idler, may disappear; but a more noble race, possessing a more sound and healthy intellect, will succeed. Education, instead of producing a sickly and distorted state of the mind, ought to be so directed as to render that invaluable temple, the human soul, perfect in all its various parts. Then would the "power" which knowledge gives be enjoyed to its full extent, not only by individuals, but communities; then would all feel the pleasures which literature scatters so profusely in its variegated pathway, enjoy the wealth which science pours upon a nation, and receive a portion of that glory which beams upon the wise and good of all countries.

HINTS TO MOTHERS.

[*Abstracted from "The Economy of Health."*]

HEALTH.—Without health riches cannot procure ease, much less happiness. It would have been an unjust dispensation of Providence, if gold had been permitted to purchase that which is the poor man's chief wealth, and the want of which reduces the affluent to worse than indigence.

BEAUTY.—Is beauty inaccessible to sickness? Of all the gifts which heaven can bestow, the "fortune of a face," (so anxiously implored by every "teeming mother" at each successive birth,) is the most doubtful in value. It is a mark at which every malignant star directs its hostile influence—a light that leads both its bearer and its followers more frequently upon rocks and quicksands, than into the haven of repose. Between beauty and disease, there is perpetual warfare. They cannot coexist for any length of time—and the *latter* is sure to be the victor in a protracted contest.

The Greeks taught, that a full expansion of the corporeal organs was essential to a complete development of the mental faculties—in other words, that strength of mind results from, or was intimately associated with, strength of body.

Gymnastic exercises, in youth, and simple food, do more to nurture the virtues of man, than all the precepts of priests and philosophers.

It is during the first and second septenniads, (the first fourteen years of life,) that the foundations of health and happiness, of physical force, intellectual acquirements, and moral rectitude, are laid. It is while the wax is ductile that the model is easily formed. In the early part of childhood, and even in youth, every fibre is so full—so exuberant of vitality, that rest is pain, and motion is pleasure.

It has been shown, that the organ of the mind, in the first stages of our existence, is exclusively occupied with its *animal* functions.

FOOD.—Errors in diet, in the first septenniad, (first seven years of childhood,) do not consist so much in the quantity of food, as in the provocative *variety* with which the infantile and unsophisticated palate is daily stimulated The rapid growth of infancy requires an abundant supply of plain nutritious aliment; but it is at this early period that simplicity in kind, and regularity in the periods of meals, would establish the foundation for order and punctuality in many other things, and thus conduce to health and happiness during life. In youth, and particularly during the first septenniad, milk and farinacious substances should form the major part of the diet, with tender animal food once a day. As the teeth multiply, the proportions of the two kinds of sustenance ought gradually and progressively to vary.

CLOTHING.—As to clothing during the first septenniad, I shall say little more than that it should be warm, light and loose. It will be time enough—alas! too soon,—to imitate the Egyptian mummy, when girls become belles, and boys beaux. I beg, for the first and second septenniads, at least, full liberty for the lungs to take air, the stomach food, and limbs exercise, before they are "cribb'd, cabin'd and confined," by those destructive operatives, the milliner, the tailor, and the boot-maker, *cum multis aliis*, who rank high among the purveyors or jackalls to the doctor and undertaker.

EXERCISE.—During the first septenniad, exercise may be left almost to the impulses of nature. The great modern error is the prevention of bodily exercise, by too early and prolonged culture of the mind. In the first years of life, exercise should be play, and play should be exercise. Towards the end of the first septenniad, some degree of order or method may be introduced into playful exercise, because it will be essential to health in the second and third epochs. Even in the first epoch, exercise in the open air should be enjoined.

Moral education of the first septenniad.—During the first, and even the second, septenniad, the amount of elementary learning *required* should be less, and the daily periods of study shorter Sport and exercise should be the regular and unfailing premium on *prompt and punctual* acquirement of the lesson prescribed. I am adverse to the system of precocious exercise of the intellect, but an advocate for early moral culture of mind. It is during the first years of our existence that the foundation of *habits* and *manners* is laid; and these will be good or bad afterwards according to their foundations. The best temper, or the purest intention, will not compensate for regularity, industry and punctuality. Habit is the result of *impression*, rather than of *reflection;* and youth is the age for receiving impressions, rather than for exercising the judgment.

[In the first seven years of childhood, the mother should be the *sovereign*, though not the *despot*. She should know how to *exercise* authority, though she should be cautious not to *abuse* it. She should be *mild*, though *firm* and *undeviating*.]

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RECEIPTS, from June 23 to July 25, inclusive.—Nos. under 10 not noticed.

Brooklyn, L. I.	19	*Glasgow,	Ky. 43	Petersburgh,	Ga. 10
Bell Air,	Md. 11	*Goshen, Or.	30	*Potsdam, St. Law.	36
Buckland,	Va. 11	Halifax,	N. S. 31	Petersburgh,	Ia. 11
Brockville,	U. C. 22	Jacksonboro,	Ots. 12	Point Pleasant,	O. 11
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Lebanon,	O. 11	Macedon, Wayne,	33	Newtown,	Pa. 11
Massena, St. Law.	10	Montebello,	Ill. 11	North Penfield,	Mon. 11
Middlebury,	Ct. 11	Mayfield,	Va. 11	Newtown,	Ia. 11
May's Lick,	Ky. 11	Marlboro, Ulster,	11	Nichols, Tioga,	11
McNary's,	Ky. 11				

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* Including former payments.

PRICE CURRENT.

ARTICLES.	New-York. July 23.	Boston. July 19.	Philadel'a. July 24.	Baltimore. July 24.
Beans white, bush.	2 00.. 2 25	1 50.. 2 00	1 37..1 62	1 25..1 50
Beef, best, cwt.	6 00.. 7 50	5 00.. 7 50	6 00..8 00	7 50..8 00
Pork, per cwt.	9 00..12 00	10 00..12 00	8 00..11 00	6 50..6 75
Butter, fresh, pound,	18.. 22	20.. 25	10.. 14	14.. 23
Cheese, pound,	8.. 18	9.. 13	10.. 11	9.. 10
Flour, best, bbl.	9 50..11 25	9 50..11 00	8 75..9 50	8 00..9 50
GRAIN—Wheat, bushel,	1 30.. 1 70	.....	1 85..2 00	1 50..1 80
Rye, do.	95.. 1 00	1 12.. 1 25	1 00..	.. 80
Oats, do.	60.. 70	62.. 68	58.. 60	52.. 53
Corn, do.	1 04.. 1 06	1 03.. 1 12	1 06..1 10	1 00..1 03
SEEDS—Red Clover, lb.	13	13.. 14	9.. 11	7½.. 8½
Timothy, bushel,	2 50.. 2 75	2 50.. 2 75	1 85	2 00..2 50
WOOL—Saxony, fleece, lb.	75.. 80	65.. 70	65.. 75	50.. 60
Merino, lb.	50.. 68	40.. 65	40.. 62	45.. 50
1-4 and com. lb.	40.. 60	40.. 45	40.. 44	33.. 36
Sheep,	2 50.. 5 00	1 67.. 3 00		
Cows and Calves,	22 00..42 00	23 00..42 00		
Cotton,	8½.. 12	....	9.. 12	10.. 17

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